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# POST-OPERATIONAL ASH CELL GROUNDWATER MONITORING PROGRAM - 1982 THUNDER BAY TGS EXTENSION

Report No 84-67-K

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## ABSTRACT

Data on the physical and chemical characteristics of groundwaters from the coal ash storage area at Thunder Bay TGS, for 1982, are summarized in this report. In general, the 1982 data show the groundwater quality to be essentially similar to that of the previous years; however, there is some indication of magnesium and boron levels increasing in the groundwaters in the north-west corner of the ash cell, where most of the ash has been deposited. This observation may be confirmed by the 1983 data.

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To Dr. W.R. Effer
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# POST-OPERATIONAL ASH CELL GROUNDWATER MONITORING PROGRAM - 1982 THUNDER BAY TGS EXTENSION

J. Complak

## INTRODUCTION

A survey of groundwater quality in the vicinity of the coal ash disposal site (Cell No 1) at Thunder Bay TGS (TBTGS) was conducted during 1982. This survey is a continuation of the pre-operational groundwater surveys conducted by London Monenco Consultants (LMC) during 1976-78/1,2/, and by Ontario Hydro during 1979-80-81/3,4,6/. The data obtained during the 1982 survey are summarized in this report.

The purpose of the pre-operational surveys was to obtain baseline data on the local hydrology and on groundwater chemistry. The 1982 survey, the first part of a planned three year program, was conducted to obtain 'post-operational' data for design verification purposes. The 1982 data can be compared with the pre-operational data to help identify changes caused by ash storage and seepage of ash leachate into the ground and possible need for corrective action.

These surveys are being conducted at the request of Ontario Hydro's Environmental Studies and Assessments Department on behalf of the Thunder Bay Project. Monitoring of groundwater quality is required as part of the conditions on the Certificate of Approval issued by the Ministry of the Environment for the coal ash disposal site for Thunder Bay TGS.

## ASH CELL HISTORY - TO END OF 1982

The following is a brief outline of the main events in the history of the Ash Disposal Cell No 1, shown in Figure 1.

1. Construction of Cell No 1 was completed by August, 1978.

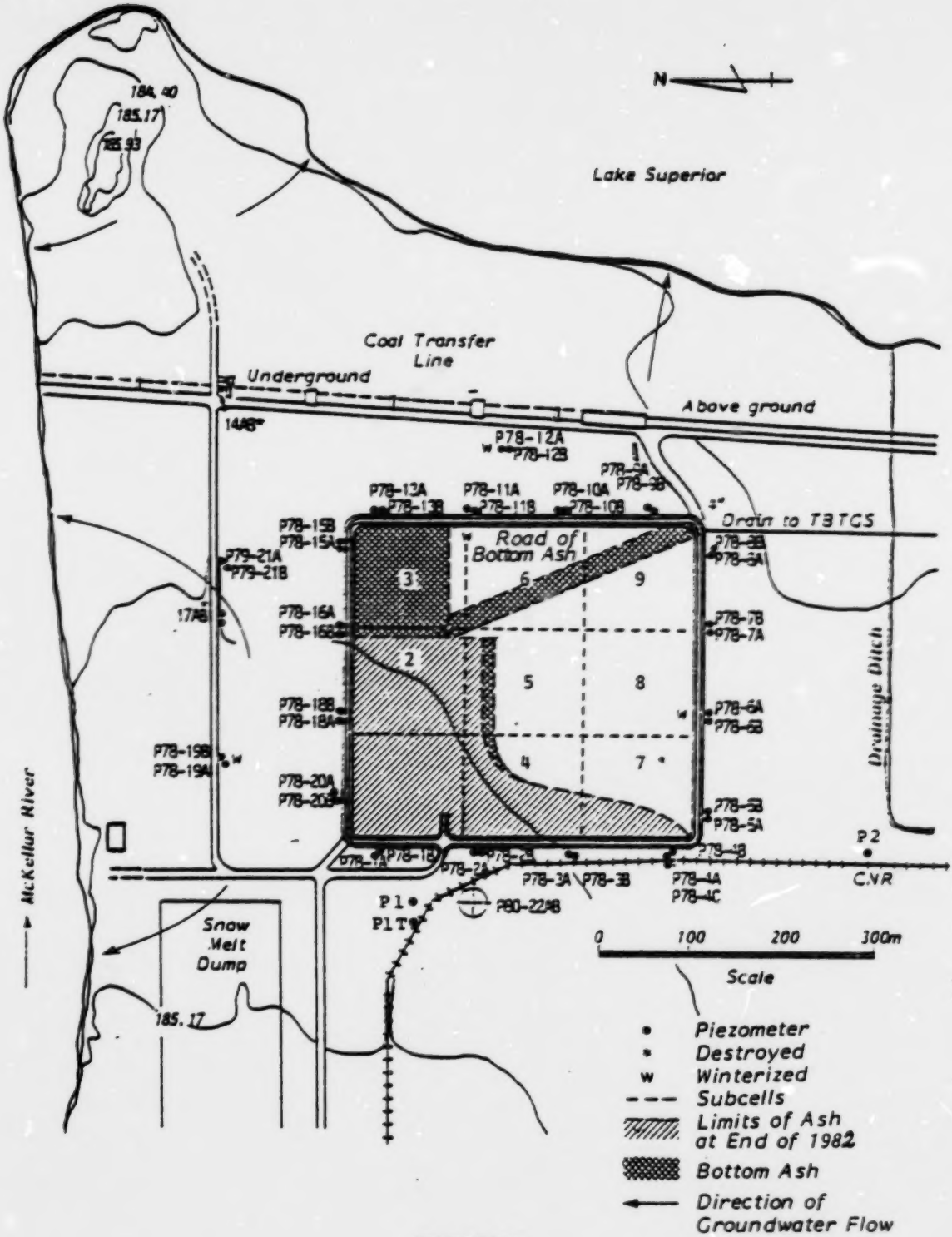



FIGURE 1

ASH DISPOSAL CELL NO. 1
PIEZOMETER NETWORK & LIMIT OF ASH DISPOSAL
THUNDER BAY TGS

2. Placing of slurry of wet bottom ash and fly ash from Unit No 1, burning U.S. bituminous coal, into Subcell No 1, began in June, 1979.

3. Placing of dry fly ash from Unit No 1 began in September 1980.

4. Placing of dry fly ash and bottom ash from Units No 2 and 3, burning Western Canadian lignite coal, began in May 1981.

5. Unit No 2 was in commercial service since September 1981. Unit No 3 came into service on July 14, 1983.

6. Table I shows the volumes of ash placed during 1982.

METHODOLOGY

To obtain the raw data needed to characterize the hydrology and the quality of the natural groundwater in the ash disposal area, the following procedures were used.

1. Piezometer and Water Level Surveys

Measurements of piezometer elevations and of water levels in the piezometers were conducted by Civil Research and by TBTGS personnel. The levels are reported as elevations relative to the average lake shoreline level of 182.88 m (600 ft) for the Thunder Bay area.

2. Groundwater Sampling

Groundwater sampling by station personnel was scheduled for May, July, August, September and November. In general, the following water level measurement and sampling procedures were followed:

(a) Bailing - Groundwater levels in each piezometer were measured and recorded.

- The water from each piezometer was bailed out with a hand-operated pump or a vacuum pump.

- Four days later the water from each piezometer was bailed out again.

(b) Sampling - One day after the second bailing in (a) 1 L of groundwater from each piezometer was collected into an acid cleaned LPE bottle.

- the water's pH and conductivity were measured immediately with portable pH and conductivity meters.

Table 1

ASH DISPOSAL INVENTORY - 1982
CELL NO 1 - TBTGS

| Date - 1982 | Bituminous Fly Ash $m^3$ | Lignite Fly Ash $m^3$ | Lignite Bottom Ash $m^3$ |
|---|---|---|---|
| January | - | - | - |
| February | 3,391 | 5,218 | 2,008 |
| March | 3,687 | 2,683 | 1,514 |
| April | 4,049 | 4,263 | 3,012 |
| May | 1,086 | 6,106 | 3,341 |
| June | - | 6,600 | 2,660 |
| July | - | 6,250 | 6,510 |
| August | - | 10,550 | 3,638 |
| September | 132 | 3,868 | 16 |
| October | 296 | 5,333 | 609 |
| November | 2,041 | 3,390 | 1,400 |
| December | 1,958 | 3,224 | 1,266 |
| Sub-Totals | 16,640 | 57,485 | 25,974 |

Total of all ash = 100,099 $m^3$

Previous Cumulative Totals

- Bituminous Ash 1979 = 3430 $m^3$
  1980 = 21010 $m^3$
  1981 = 18755 $m^3$

- Lignite Ash 1981 = 26308 $m^3$

(c) Preparation - All Samples collected were kept in a refrigerator at about 4°C.

- The samples were filtered as quickly as possible using 0.45 µm prewashed Millipore filters.

- A pretreated 500 mL LPE bottle was filled with the filtrate to which were added 2.5 mL of "ULTREX" $HNO_3$.

- A portion of the remaining filtrate was used for selected field tests.

(d) Shipping - The remaining filtrate (from c) was kept at about 4°C, in a cooler with ice packs, and shipped, together with the acidified samples, to Research Division, by Air Express, for analysis.

3. Groundwater Tests & Analysis

(a) Routine Analysis - TBTGS & Research

Groundwater samples taken in May, July, October and November were tested at TBTGS for pH, conductivity and alkalinity and by Research for Ca, Mg, Na, K, Cℓ, $SO_4$, B, $PO_4$ and Sr concentrations.

(b) Comprehensive Analysis - Research Division

Comprehensive chemical analyses of groundwater samples, taken in May and July, were carried out by Research. The characteristics determined are shown below:

COMPREHENSIVE GROUNDWATER ANALYSIS

| Characteristics | | Characteristics | |
|---|---|---|---|
| pH | | Beryllium | Be |
| Conductivity | | Iron | Fe |
| Alkalinity | OH, $CO_3$ & $HCO_3$ | Titanium | Ti |
| Sulphate | $SO_4$ | Manganese | Mn |
| Chloride | Cl | Vanadium | V |
| Nitrate | $NO_3$ | Chromium | Cr |
| Phosphate | $PO_4$ | Copper | Cu |
| Calcium | Ca | Molybdenum | Mo |
| Magnesium | Mg | Silver | Ag |
| Sodium | Na | Cobalt | Co |
| Potassium | K | Nickel | Ni |
| Strontium | Sr | Zinc | Zn |
| Barium | Ba | Arsenic | As |
| Aluminum | Al | Boron | B |
| Silicon | Si | Lead | Pb |
| Thorium | Th | Selenium | Se |
| Mercury | Hg | Cadmium | Cd |

(c) Analytical Methods

In general, the analytical methods used were essentially those outlined in the Standard Methods for the Examination of Water and Wastewater, 14th Edition, published by the American Public Health Association. Ion chromatography, neutron activation and other instrumental techniques, currently in general use by the Analytic Section, were also used for some determinations.

4. Rationale

(a) Field Tests

Because some parameters of natural waters change after sampling, characteristics such as pH, alkalinity and conductivity were determined in the field by station personnel.

(b) Comprehensive Analysis

Comprehensive analyses of all samples taken were carried out by Research Division.

(c) Parameter Significance

Of the many parameters determined concentrations of Na, Mg, Sr and B are considered to be the main indicators of ash leachate contaminant migration. Alkalinity and $SO_4$ concentrations commonly considered to be characteristics of ash leachates, are not considered to be particularly suitable contaminant indicators although they do help in general characterization of water quality. Alkalinity is subject to change in passage through soil and sulphate concentrations are limited by saturation effects. In addition, $SO_4$ concentrations in the groundwater in the study area have been found to be highly variable. It is also suspected that $SO_4$ concentrations may be affected by natural biological activity in the peat layer.

Sodium is a major component of ash leachate. Its solubility is not limited by saturation effects and it is not expected to undergo significant attenuation in passage through the sandy silt or peat layers. The analysis for sodium is considerably less time consuming than for $SO_4$ further supporting the choice of Na as a leachate indicator.

Occasional checks of Sr and B concentrations in piezometer groundwater samples are also considered useful. Sr and B are specific indicators of ash leachate. Although generally not appearing in concentrations as high as Na, they are present in leachates at levels greater than ten times those in the local groundwater. Determination of Sr and B is relatively easy.

Magnesium concentrations could also serve as a suitable leachate contaminant or ion indicator, however; care must be taken in data interpretation when pH levels of the groundwater are high. High pH levels tend to promote precipitation of Mg thus lowering its

dissolved concentration in the water sample. This could contribute to possible misinterpretation of the data.

Concentrations of the indicator ions and other selected analytical data, including heavy metals, that will be obtained each year on the groundwater characteristics, will be presented in future post-operational summary annual reports in the form of tables and Piper plots to aid in identifying any changes that can be attributed to ash placement and leachate seepage into the natural groundwater in the area of the ash disposal site.

## RESULTS OF FIELD AND LABORATORY WORK CONDUCTED IN 1982

### 1. Piezometer Network Level Surveys

Piezometer elevation surveys were carried out by Civil Research Department, on June 9 and November 3, 1982. The 1982 results, together with those obtained from 1979 to 1981, are summarized in Table II. Locations of the piezometers surveyed are shown in Figure 1.

### 2. Groundwater Level Surveys

Measurements of groundwater levels in piezometers on the perimeter of Ash Cell were carried out on sixteen occasions during 1982. The results are shown in Table III.

Lake Superior water levels (daily means) for 1982, obtained from the Environment Canada, Annual Meteorological Summary 1982, for location Station 10050, in Thunder Bay, are shown in Table IV.

### 3. Groundwater Characteristics

The analytical results obtained, at Thunder Bay TGS and at Research, on groundwater samples taken on May 19, July 23, October 15 and November 18, 1982, are shown in Appendix A. Although the TBTGS data pertain to the same samples as the Research data the TBTGS results are shown under a different date (one day after the actual sampling) to avoid computer problems in recalling the data in the future. The main groundwater characteristics are presented in Tables V to IX, in the discussion section.

TABLE II

ASH CELL GROUNDWATER MONITORING PROGRAM - 1982
THUNDER BAY TGS EXTENSION

PIEZOMETER REFERENCE LEVELS
(1979-1982)

| Piezometer Identification | | Piezometer Reference Levels, m (Above Reference Level of 192.88 m) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Date Surveyed | | | | | | | | | | | | | |
| | | Nov. 2/79 | June 5/80 | Δ | Nov. 20/80 | Δ | July 17/81 | Δ | Nov 2/81 | Δ | June 8/82 | Δ | Nov 7/82 | Δ | |
| P74 | 1A | 2.12 | 2.17 | 0.05 | 2.16 | 0.01 | 2.17 | +0.01 | 2.15 | 0.02 | 2.17 | 0.02 | 2.14 | 0.03 | +0.01 |
| | 1B | 2.24 | 2.29 | 0.04 | 2.33 | 0.05 | 2.19 | +0.14 | 2.26 | 0.07 | 2.29 | 0.03 | 2.24 | 0.05 | +0.02 |
| P76* | 2A | 2.07 | 2.24 | 0.04 | 2.26 | 0.02 | 2.15 | +0.11 | 2.21 | 0.06 | 2.24 | 0.03 | 2.20 | 0.04 | +0.04 |
| | 2B | 2.05 | 2.25 | 0.05 | 2.27 | 0.02 | 2.19 | +0.08 | 2.22 | 0.03 | 2.25 | 0.03 | 2.22 | 0.03 | +0.03 |
| P75 | 3A | 2.21 | 2.25 | 0.04 | 2.29 | 0.04 | 2.24 | +0.05 | 2.25 | 0.01 | 2.28 | 0.03 | 2.24 | 0.04 | +0.03 |
| | 3B | 2.10 | 2.11 | 0.01 | 2.15 | 0.04 | 2.12 | +0.03 | 2.12 | 0.00 | 2.14 | 0.02 | 2.11 | 0.03 | +0.02 |
| P73* | 4A | 2.15 | 2.19 | 0.04 | 2.22 | 0.03 | 2.20 | +0.02 | 2.17 | 0.03 | 2.20 | 0.03 | 2.19 | 0.01 | +0.03 |
| | 4B | 2.11 | 2.14 | 0.03 | 2.16 | 0.02 | 2.16 | 0.00 | 2.14 | 0.02 | 2.16 | 0.02 | 2.13 | 0.03 | +0.03 |
| | 4C | 1.94 | 2.11 | 0.03 | 2.15 | 0.04 | 1.95 | +0.20 | 2.12 | 0.17 | 2.14 | 0.02 | 2.11 | 0.03 | +0.03 |
| P71 | 5A | 2.12 | 2.19 | 0.07 | 2.22 | 0.03 | 2.19 | +0.03 | 2.22 | 0.03 | 2.25 | 0.03 | 2.22 | 0.03 | +0.03 |
| | 5B | 1.99 | 2.16 | 0.17 | 2.18 | 0.02 | 2.01 | +0.17 | 2.16 | 0.15 | 2.17 | 0.01 | 2.18 | 0.01 | +0.01 |
| P72* | 6A | 1.91 | 1.96 | 0.05 | 1.98 | 0.02 | 1.93 | +0.03 | 1.94 | 0.01 | 1.97 | 0.03 | 1.93 | 0.04 | +0.02 |
| | 6B | 1.91 | 1.94 | 0.03 | 1.98 | 0.04 | 1.93 | +0.05 | 1.94 | 0.01 | 1.94 | 0.00 | 1.93 | 0.01 | +0.01 |
| P70 | 7A | 1.93 | 1.97 | 0.04 | 1.97 | 0.00 | 1.93 | +0.04 | 1.93 | 0.00 | 1.97 | 0.04 | 1.94 | 0.03 | +0.03 |
| | 7B | 1.89 | 1.93 | 0.04 | 1.98 | 0.05 | 1.95 | +0.03 | 1.93 | 0.02 | 1.97 | 0.04 | 1.94 | 0.03 | +0.03 |
| P70 | 8A | 1.92 | 1.97 | 0.05 | 1.98 | 0.01 | 1.96 | +0.02 | 1.95 | 0.01 | 1.97 | 0.02 | 1.94 | 0.03 | +0.03 |
| | 8B | 1.88 | 1.94 | 0.06 | 1.94 | 0.00 | 1.93 | +0.01 | 1.94 | 0.01 | 1.94 | 0.00 | 1.93 | 0.01 | +0.01 |
| P70 | 9A | 1.91 | 1.94 | 0.03 | 1.96 | 0.02 | 1.94 | +0.02 | 1.94 | 0.00 | 1.96 | 0.02 | 1.94 | 0.02 | +0.02 |
| | 9B | 1.87 | 1.94 | 0.07 | 1.94 | 0.00 | 1.93 | +0.01 | 1.94 | 0.01 | 1.94 | 0.00 | 1.93 | 0.01 | +0.01 |
| P69 | 10A | 1.77 | 1.79 | 0.02 | 1.81 | 0.02 | 1.81 | 0.00 | 1.80 | 0.01 | 1.82 | 0.02 | 1.80 | 0.02 | +0.02 |
| | 10B | 1.78 | 1.80 | 0.02 | 1.84 | 0.04 | 1.84 | 0.00 | 1.83 | 0.01 | 1.85 | 0.02 | 1.83 | 0.02 | +0.02 |
| P68* | 11A | 1.74 | 1.78 | 0.04 | 1.84 | 0.06 | 1.84 | 0.00 | 1.84 | 0.00 | 1.86 | 0.02 | 1.84 | 0.02 | +0.02 |
| | 11B | 1.42 | 1.47 | 0.05 | 1.48 | 0.01 | 1.48 | 0.00 | 1.48 | 0.00 | 1.48 | 0.00 | 1.48 | 0.00 | 0.00 |
| P74 | 12A | 1.94 | 2.00 | 0.06 | 2.01 | 0.01 | 1.98 | +0.03 | 1.99 | 0.01 | 2.01 | 0.02 | 1.98 | 0.03 | +0.03 |
| | 12B | 1.93 | 1.99 | 0.06 | 2.01 | 0.02 | 1.98 | +0.03 | 1.99 | 0.01 | 2.01 | 0.02 | 1.98 | 0.03 | +0.03 |
| P73 | 13A | 2.15 | 2.19 | 0.04 | 2.20 | 0.01 | 2.19 | +0.01 | 2.19 | 0.00 | 2.20 | 0.01 | 2.19 | 0.01 | +0.01 |
| | 13B | 2.14 | 2.18 | 0.04 | 2.20 | 0.02 | 2.19 | +0.01 | 2.19 | 0.00 | 2.20 | 0.01 | 2.19 | 0.01 | +0.01 |
| P72 | 14A | 2.11 | 2.15 | 0.04 | 2.17 | 0.02 | 2.17 | 0.00 | 2.17 | 0.00 | 2.18 | 0.01 | 2.17 | 0.01 | +0.01 |
| | 14B | 2.13 | 2.17 | 0.04 | 2.19 | 0.02 | 2.19 | 0.00 | 2.19 | 0.00 | 2.20 | 0.01 | 2.19 | 0.01 | +0.01 |
| P72* | 15A | 2.11 | 2.15 | 0.04 | 2.19 | 0.04 | 2.19 | 0.00 | 2.19 | 0.00 | 2.20 | 0.01 | 2.19 | 0.01 | +0.01 |
| | 15B | 2.09 | 2.13 | 0.04 | 2.17 | 0.04 | 2.17 | 0.00 | 2.17 | 0.00 | 2.18 | 0.01 | 2.17 | 0.01 | +0.01 |
| P71 | 16A | 2.15 | 2.19 | 0.04 | 2.18 | 0.01 | 2.18 | 0.00 | 2.18 | 0.00 | 2.19 | 0.01 | 2.18 | 0.01 | +0.01 |
| | 16B | 2.13 | 2.17 | 0.04 | 2.18 | 0.01 | 2.18 | 0.00 | 2.18 | 0.00 | 2.19 | 0.01 | 2.18 | 0.01 | +0.01 |
| P73 | 17A | 1.97 | 1.99 | 0.02 | 1.99 | 0.00 | 1.99 | 0.00 | 1.98 | 0.01 | 2.00 | 0.02 | 1.98 | 0.02 | +0.02 |
| | 17B | 1.98 | 2.01 | 0.03 | 2.01 | 0.00 | 2.01 | 0.00 | 2.00 | 0.01 | 2.01 | 0.01 | 2.00 | 0.01 | +0.01 |
| P75 | 18A | - | 2.15 | - | 2.17 | - | 2.17 | 0.00 | 2.16 | 0.01 | 2.17 | 0.01 | 2.16 | 0.01 | +0.01 |
| | 18B | - | 2.13 | - | 2.15 | - | 2.15 | 0.00 | 2.14 | 0.01 | 2.15 | 0.01 | 2.14 | 0.01 | +0.01 |
| Ice/Wet Cover | | - | 1.80 | - | - | - | 1.79 | - | - | - | 1.80 | - | - | - | - |

* = vibrated wells
+ New wells - installed June 1, 1981
Δ = Difference from previous level survey, in metres.

# Table III

ASH CELL GROUNDWATER MONITORING PROGRAM - 1982
THUNDER BAY TCS EXTENSION

RELATIVE PIEZOMETER AND LAKE WATER LEVELS - 1982
(Relative to Average Shoreline Level of 182.88 m)

| Piezometer Identification | Relative Water Levels in Piezometers (m) — Dates Measurements Were Taken | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan. 15/82 | Feb. 19/82 | Mar. 5/82 | Mar. 19/82 | Apr. 2/82 | Apr. 16/82 | May 14/82 | June 25/82 | July 23/82 | Aug. 20/82 | Sept 3/82 | Sept 28/82 | Oct. 13/82 | Oct. 25/82 | Nov. 8/82 | Nov. 17/82 |
| P78-1A | | | | | | | 1.33 | 1.08 | 1.18 | 1.20 | 1.31 | 1.16 | 1.28 | 1.34 | 1.26 | 1.24 |
| P78-1B | | | | | | | 1.39 | 1.13 | 1.27 | 1.30 | 1.41 | 1.23 | 1.38 | 1.45 | 1.37 | 1.36 |
| P78-2A | 0.24 | 0.07 | 0.15 | 0.07 | 0.84 | 1.40 | 1.42 | 1.31 | 1.37 | 1.40 | 1.42 | 1.32 | 1.45 | 1.46 | 1.41 | 1.36 |
| P78-2B | 0.28 | 0.28 | 0.31 | F | 0.81 | 1.42 | 1.43 | 1.32 | 1.38 | 1.41 | 1.41 | 1.34 | 1.45 | 1.48 | 1.41 | 1.39 |
| P78-3A | | | | | | | 1.51 | 1.32 | 1.37 | 1.40 | 1.55 | 1.33 | 1.57 | 1.50 | 1.37 | 1.37 |
| P78-3B | | | | | | | 1.48 | 1.30 | 1.40 | 1.41 | 1.26 | 1.31 | 1.54 | 1.49 | 1.38 | 1.34 |
| P78-4A | | | | | | | 1.47 | 1.27 | 1.40 | 1.44 | 1.39 | 1.30 | 1.56 | 1.48 | 1.36 | 1.42 |
| P78-4B | | | | | | | 1.23 | 1.25 | 1.32 | 1.36 | 1.37 | 1.24 | 1.51 | 1.48 | 1.36 | 1.41 |
| P78-4C | | | | | | | 1.43 | 1.24 | 1.39 | 1.41 | 1.40 | 1.25 | 1.52 | 1.47 | 1.37 | 1.41 |
| P78-5A | | | | | | | 1.25 | 1.25 | 1.26 | 1.23 | 1.25 | 1.25 | 1.29 | 1.30 | 1.25 | 1.22 |
| P78-5B | | | | | | | 1.24 | 1.16 | 1.20 | 1.16 | 1.25 | 1.18 | 1.22 | 1.30 | 1.23 | 1.21 |
| P78-6A | 0.41 | 0.23 | 0.30 | 0.31 | 1.12 | 1.16F | 1.26 | 1.11 | 1.22 | 1.17 | 1.21 | 1.13 | 1.23 | 1.28 | 1.23 | 1.17 |
| P78-6B | 0.48 | 0.23 | 0.32 | 0.22 | 1.11 | 1.17F | 1.20 | 1.11 | 1.22 | 1.17 | 1.19 | 1.14 | 1.28 | 1.28 | 1.22 | 1.18 |
| P78-7A | | | | | | | 1.16 | 1.04 | 1.23 | 1.14 | 1.20 | 1.10 | 1.28 | 1.27 | - | 1.24 |
| P78-7B | | | | | | | 1.18 | 1.07 | 1.20 | 1.17 | 1.19 | 1.10 | 1.24 | 1.27 | 1.18 | 1.08 |
| P78-8A | | | | | | | 1.18 | 1.02 | 1.20 | 1.16 | 1.19 | 1.12 | 1.25 | 1.27 | 1.19 | 1.20 |
| P78-8B | | | | | | | 1.22 | 1.05 | 1.23 | 1.17 | 1.21 | 1.13 | 1.06 | 1.28 | 1.13 | 1.18 |
| P78-9A | | | | | | | 0.90 | 0.94 | 0.94 | 0.96 | 0.97 | 1.00 | 0.96 | 1.00 | 0.94 | 0.97 |
| P78-9B | | | | | | | 0.64 | 0.89 | 0.92 | 0.93 | 0.97 | 0.90 | 0.93 | 0.99 | 0.92 | 0.95 |
| P78-10A | | | | | | | 1.11 | 1.07 | 1.12 | 1.12 | 1.16 | 1.08 | 1.17 | 1.19 | 1.16 | 1.14 |
| P78-10B | | | | | | | 0.62 | 1.07 | 1.12 | 1.15 | 1.19 | 1.09 | 1.15 | 1.19 | 1.13 | 1.26 |
| P78-11A | 0.64 | 0.42 | 0.57 | 0.71 | 1.10 | 1.11F | 1.15 | 1.04 | 1.11 | 1.13 | 1.18 | 1.07 | 1.14 | 1.19 | 1.13 | 1.15 |
| P78-11B | F | 0.34 | 0.60 | 0.72 | 1.08 | 1.16 | 1.19 | 1.04 | 1.11 | 1.12 | 1.16 | 1.06 | 1.14 | 1.19 | 1.14 | 1.14 |
| P78-12A | | F | | | 0.85F | 0.80F | 1.08 | 1.04 | 1.09 | - | - | - | - | 1.16 | - | 1.14 |
| P78-12B | | 0.02 | | | 0.95F | 0.91F | 1.28 | 1.06 | 1.11 | - | - | - | - | 1.16 | - | 1.15 |
| P78-13A | | | | | | | 1.02 | 1.07 | 1.11 | 1.16 | 1.16 | 1.08 | 1.17 | 1.18 | 1.13 | 1.17 |
| P78-13B | | | | | | | 0.87 | 1.10 | 1.15 | 1.20 | 1.19 | 1.12 | 1.21 | 1.19 | - | 1.13 |
| P78-14A | | | | | | | - | - | - | - | - | - | - | - | - | - |
| P78-14B | | | | | | | - | - | - | - | - | - | - | - | - | - |
| P78-15A | | | | | | | 1.19 | 1.03 | 1.10 | 1.16 | 1.23 | 1.09 | 1.20 | 1.25 | 1.22 | 1.13 |
| P78-15B | | | | | | | 1.17 | 1.10 | 1.29 | 1.24 | 1.24 | 1.14 | 1.26 | 1.26 | 1.17 | 1.20 |
| P78-16A | | | | | | | 1.29 | 1.14 | 1.12 | 1.30 | 1.32 | 1.20 | 1.31 | 1.32 | 1.26 | 1.14 |
| P78-16B | | | | | | | 1.29 | 1.14 | 1.35 | 1.25 | 1.29 | 1.21 | 1.37 | 1.31 | 1.25 | 1.16 |
| P78-17A | | | | | | | - | - | - | - | - | - | - | - | - | - |
| P78-17B | | | | | | | - | - | - | - | - | - | - | - | - | - |
| P78-18A | 0.40 | 0.26 | 0.31 | 0.28 | 1.12 | 1.36 | 1.39 | 1.20 | 1.30 | 1.32 | 1.41 | 1.25 | 1.34 | 1.36 | 1.32 | 1.31 |
| P78-18B | F | F | F | F | 1.37 | 1.37 | 1.37 | 1.23 | 1.30 | 1.30 | 1.36 | 1.26 | 1.23 | 1.36 | 1.23 | 1.31 |
| P78-19A | 0.42 | 0.21 | 0.23 | 0.23 | 1.26 | 1.42 | 1.43 | 1.48 | 1.18 | 1.25 | 1.29 | 1.18 | 1.34 | 1.31 | 1.19 | 1.21 |
| P78-19B | F | F | F | F | 1.22 | 1.43 | 1.40 | 1.39 | 1.17 | 1.27 | 1.30 | 1.19 | 1.33 | 1.30 | 1.28 | 1.21 |
| P78-20A | | | | | | | 1.42 | 1.08 | 1.42 | 1.39 | 1.41 | 1.36 | 1.41 | 1.42 | 1.39 | 1.41 |
| P78-20B | | | | | | | 1.43 | 1.07 | 1.41 | 1.39 | 1.44 | 1.36 | 1.44 | 1.42 | 1.35 | 1.40 |
| P79-21A | | | | | | | 1.16 | 1.08 | - | 1.28 | 1.18 | 1.12 | 1.22 | 1.19 | 1.18 | 1.15 |
| P79-21B | | | | | | | 1.16 | 1.08 | - | 1.10 | 1.16 | 1.14 | 1.19 | 1.19 | 1.18 | 1.20 |
| P80-22A | | | | | | | 1.43 | 1.41 | - | 1.50 | 1.44 | 1.41 | 1.57 | 1.45 | 1.44 | 1.28 |
| P80-22B | | | | | | | 1.49 | 1.42 | - | 1.49 | 1.41 | 1.42 | 1.53 | 1.50 | 1.45 | 1.43 |
| Lake Level (1) | -0.07 | -0.11 | -0.16 | | -0.07 | | 0.09 | 0.15 | 0.24 | 0.30 | | 0.31 | | 0.38 | 0.40 | 0.34 (Dec) |

F - Water Frozen

(1) - Relative Average Monthly Lake Levels (relative to 182.88 m) obtained from Annual Meteorological Summary - 1982 - for Station 10050, Thunder Bay, issued by the Canadian Climate Centre (Downsview Centre (Downsview), Atmospheric Environment Service, Environment Canada.

DAILY MEAN LEVELS MOYENNES JOURNALIERES DE NIVEAU D EAU

| STATION 100RD THUNDER BAY CAT | | | | DAILY MEANS | | | | | | | | | | HIGH INSTANTANEOUS | | | LOW INSTANTANEOUS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DAY | MONTH | YEAR | MONTHLY MEANS | | | | | | | | | | | TIME ZONE EST | | | TIME ZONE EST | | |
| | | | | | | | | | | | | | | DAY | TIME | HT | DAY | TIME | HT |
| 1 | 10 | 1 | 82 | | 18284 | 18294 | 18285 | 18281 | 18288 | 18279 | 18293 | 18281 | 18279 | 18272 | | | | | | |
| 1 | 20 | 1 | 82 | | 18280 | 18282 | 18283 | 18285 | 18282 | 18277 | 18281 | 18282 | 18282 | 18280 | | | | | | |
| 1 | 31 | 1 | 82 | 182814 | 18281 | 18284 | 18278 | 18278 | 18279 | 18282 | 18288 | 18277 | 18281 | 18277 | 18280 | 2 | 2015 | 18304 | 10 | 2045 | 18262 |
| | | | | -0.07* | | | | | | | | | | | | | | | | | |
| 1 | 10 | 2 | 82 | | 18280 | 18280 | 18277 | 18279 | 18278 | 18279 | 18277 | 18278 | 18274 | 18279 | | | | | | | |
| 1 | 20 | 2 | 82 | | 18277 | 18277 | 18277 | 18280 | 18277 | 18276 | 18279 | 18279 | 18278 | 18277 | | | | | | | |
| 1 | 28 | 2 | 82 | 182774 | 18276 | 18277 | 18275 | 18275 | 18276 | 18275 | 18274 | 18278 | | | | 15 | 100 | 18287 | 23 | 15 | 18263 |
| | | | | -0.11 | | | | | | | | | | | | | | | | | |
| 1 | 10 | 3 | 82 | | 18274 | 18273 | 18275 | 18275 | 18275 | 18274 | 18273 | 18273 | 18274 | 18276 | | | | | | | |
| 1 | 20 | 3 | 82 | | 18274 | 18278 | 18274 | 18274 | 18277 | 18275 | 18275 | 18273 | 18273 | 18274 | | | | | | | |
| 1 | 31 | 3 | 82 | 182744 | 18274 | 18274 | 18277 | 18275 | 18273 | 18271 | 18273 | 18276 | 18275 | 18277 | 18273 | 30 | 1745 | 18287 | 11 | 1345 | 18265 |
| | | | | -0.14 | | | | | | | | | | | | | | | | | |
| 1 | 10 | 4 | 82 | | 18272 | 18279 | 18271 | 18275 | 18277 | 18277 | 18278 | 18279 | 18279 | 18278 | | | | | | | |
| 1 | 20 | 4 | 82 | | 18278 | 18280 | 18277 | 18280 | 18282 | 18280 | 18278 | 18282 | 18281 | 18281 | | | | | | | |
| 1 | 30 | 4 | 82 | 182805 | 18283 | 18285 | 18285 | 18286 | 18284 | 18284 | 18285 | 18287 | 18287 | 18287 | | 24 | 1545 | 18290 | 3 | 1530 | 18261 |
| | | | | -0.07 | | | | | | | | | | | | | | | | | |
| 1 | 10 | 5 | 82 | | 18287 | 18287 | 18289 | 18291 | 18290 | 18291 | 18295 | 18293 | 18293 | 18300 | | | | | | | |
| 1 | 20 | 5 | 82 | | 18298 | 18295 | 18299 | 18299 | 18298 | 18299 | 18300 | 18303 | 18300 | 18300 | | | | | | | |
| 1 | 31 | 5 | 82 | 182974 | 18300 | 18300 | 18301 | 18301 | 18303 | 18302 | 18301 | 18301 | 18302 | 18301 | 18301 | 11 | 615 | 18318 | 10 | 2330 | 18276 |
| | | | | 0.09 | | | | | | | | | | | | | | | | | |
| 1 | 10 | 6 | 82 | | 18302 | 18301 | 18303 | 18304 | 18302 | 18303 | 18305 | 18302 | 18302 | 18304 | | | | | | | |
| 1 | 20 | 6 | 82 | | 18304 | 18304 | 18304 | 18305 | 18302 | 18305 | 18303 | 18303 | 18304 | 18303 | | | | | | | |
| 1 | 30 | 6 | 82 | 183032 | 18303 | 18302 | 18304 | 18303 | 18303 | 18303 | 18305 | 18303 | 18302 | 18302 | | 7 | 630 | 18315 | 8 | 945 | 18288 |
| | | | | 0.15 | | | | | | | | | | | | | | | | | |
| 1 | 10 | 7 | 82 | | 18303 | 18303 | 18302 | 18304 | 18305 | 18305 | 18306 | 18306 | 18305 | 18306 | | | | | | | |
| 1 | 20 | 7 | 82 | | 18308 | 18313 | 18314 | 18313 | 18314 | 18316 | 18319 | 18317 | 18317 | 18318 | | | | | | | |
| 1 | 31 | 7 | 82 | 183123 | 18317 | 18316 | 18316 | 18319 | 18317 | 18317 | 18316 | 18316 | 18318 | 18317 | 18319 | 17 | 1015 | 18340 | 9 | 1215 | 18296 |
| | | | | 0.24 | | | | | | | | | | | | | | | | | |
| 1 | 10 | 8 | 82 | | 18316 | 18318 | 18321 | 18319 | 18318 | 18319 | 18320 | 18320 | 18316 | 18317 | | | | | | | |
| 1 | 20 | 8 | 82 | | 18318 | 18318 | 18319 | 18319 | 18319 | 18317 | 18317 | 18318 | 18318 | 18318 | | | | | | | |
| 1 | 31 | 8 | 82 | 183182 | 18319 | 18319 | 18319 | 18319 | 18318 | 18318 | 18316 | 18317 | 18319 | 18316 | 18318 | 3 | 1100 | 18338 | 3 | 630 | 18305 |
| | | | | 0.30 | | | | | | | | | | | | | | | | | |
| 1 | 10 | 9 | 82 | | 18318 | 18317 | 18316 | 18320 | 18316 | 18318 | 18318 | 18320 | 18319 | 18319 | | | | | | | |
| 1 | 20 | 9 | 82 | | 18319 | 18320 | 18318 | 18317 | 18318 | 18319 | 18319 | 18320 | 18319 | 18317 | | | | | | | |
| 1 | 30 | 9 | 82 | 183192 | 18319 | 18321 | 18320 | 18318 | 18320 | 18322 | 18319 | 18323 | 18325 | 18321 | | 29 | 400 | 18336 | 5 | 1015 | 18307 |
| | | | | 0.31 | | | | | | | | | | | | | | | | | |
| 1 | 10 | 10 | 82 | | 18318 | 18321 | 18320 | 18321 | 18320 | 18323 | 18327 | 18324 | 18325 | 18331 | | | | | | | |
| 1 | 20 | 10 | 82 | | 18328 | 18327 | 18326 | 18326 | 18322 | 18323 | 18327 | 18326 | 18324 | 18321 | | | | | | | |
| 1 | 31 | 10 | 82 | 183257 | 18328 | 18329 | 18329 | 18330 | 18327 | 18328 | 18330 | 18329 | 18332 | 18328 | 18328 | 7 | 845 | 18338 | 6 | 545 | 18307 |
| | | | | 0.38 | | | | | | | | | | | | | | | | | |
| 1 | 10 | 11 | 82 | | 18328 | 18327 | 18329 | 18328 | 18326 | 18328 | 18330 | 18326 | 18327 | 18330 | | | | | | | |
| 1 | 20 | 11 | 82 | | 18327 | 18320 | 18329 | 18327 | 18332 | 18329 | 18330 | 18331 | 18331 | 18333 | | | | | | | |
| 1 | 30 | 11 | 82 | 183279 | 18326 | 18328 | 18326 | 18327 | 18326 | 18324 | 18328 | 18328 | 18327 | 18329 | | 20 | 1815 | 18344 | 12 | 945 | 18297 |
| | | | | 0.40 | | | | | | | | | | | | | | | | | |
| 1 | 10 | 12 | 82 | | 18327 | 18328 | 18328 | 18326 | 18325 | 18322 | 18322 | 18320 | 18326 | 18319 | | | | | | | |
| 1 | 20 | 12 | 82 | | 18319 | 18323 | 18322 | 18321 | 18319 | 18320 | 18326 | 18323 | 18319 | 18318 | | | | | | | |
| 1 | 31 | 12 | 82 | 183220 | 18320 | 18322 | 18324 | 18320 | 18318 | 18324 | 18322 | 18316 | 18320 | 18322 | 18322 | 2 | 2315 | 18346 | 28 | 815 | 18302 |
| | | | | 0.34 | | | | | | | | | | | | | | | | | |

*Lake water levels. Difference between monthly means and average shoreline level of 182.88 m.

LAKE WATER LEVELS 1982 - ENVIRONMENT CANADA ANNUAL METEOROLOGICAL SUMMARY 1982 THUNDER BAY 'A'

TABLE IV

## DISCUSSION

### 1. Piezometer Reference Levels

Piezometer reference levels for 1982, shown in Table II, show that in all cases the increases in piezometer elevations between the levels obtained in November 2, 1981,and June 9, 1982, were negated by the decreases in piezometer levels between June 9 and November 3, 1982, measurements. These changes in the 1981 and 1982 piezometer levels are attributed to the questionable measurements made by an outside contractor hired for the July 17, 1981 and June 9, 1982 surveys.

Examination of all the data available on piezometer elevations (1979 to November 1982) shows very little movement in the majority of the piezometers since they were originally installed. Most of the changes in elevations were increases, the greatest of which occurred in piezometers 21A (0.12 m), 20B (0.11 m) and 5A and 5B (0.10 m). Only five decreases occurred, the largest of which were in piezometers 22A (-0.14 m) and in 21B (-0.08 m).

Because most piezometer levels have stabilized and the changes are considered to be insignificant it is concluded that one annual survey of piezometer levels in 1983 (June) should be adequate.

### 2. Groundwater Levels

The piezometer water level data acquired in 1982 (Table III) show that groundwater levels in the ash cell area varied from a low of 0.07 m above the average shoreline level of 182.88 m (reference level) in piezometer 2A on February 19 and March 19, 1982, to a high of 1.72 m in piezometer 15A on November 8. As the rest of the levels for piezometer 15A are significantly lower, this reading is questionable. Other high levels occurred in piezometers 3A, 3B, 4A, 4C, 19A, 19B, 22A and 22B. In general, the data show that low water levels exist in all piezometers during the winter months and high water levels from April through November.

The relationships between groundwater levels, lake levels and total precipitation, presented in Figure 2, show that groundwater levels increased in the second half of March and then remained essentially at the high level until the middle of November. During the period when groundwater levels increased in the spring the lake water level was at its lowest and below the previously established average shoreline level of 182.88 m. The gradual increase in lake water levels from April to its peak towards the end of November does not show any appreciable effect on groundwater level variations.

The pattern of the 1982 groundwater levels is somewhat different from that of the previous years. During 1981 the levels were at their highest in January, dropped in February and then rose during the spring months. There was a gradual drop in levels during the summer to its maximum drop in August after which the levels rose

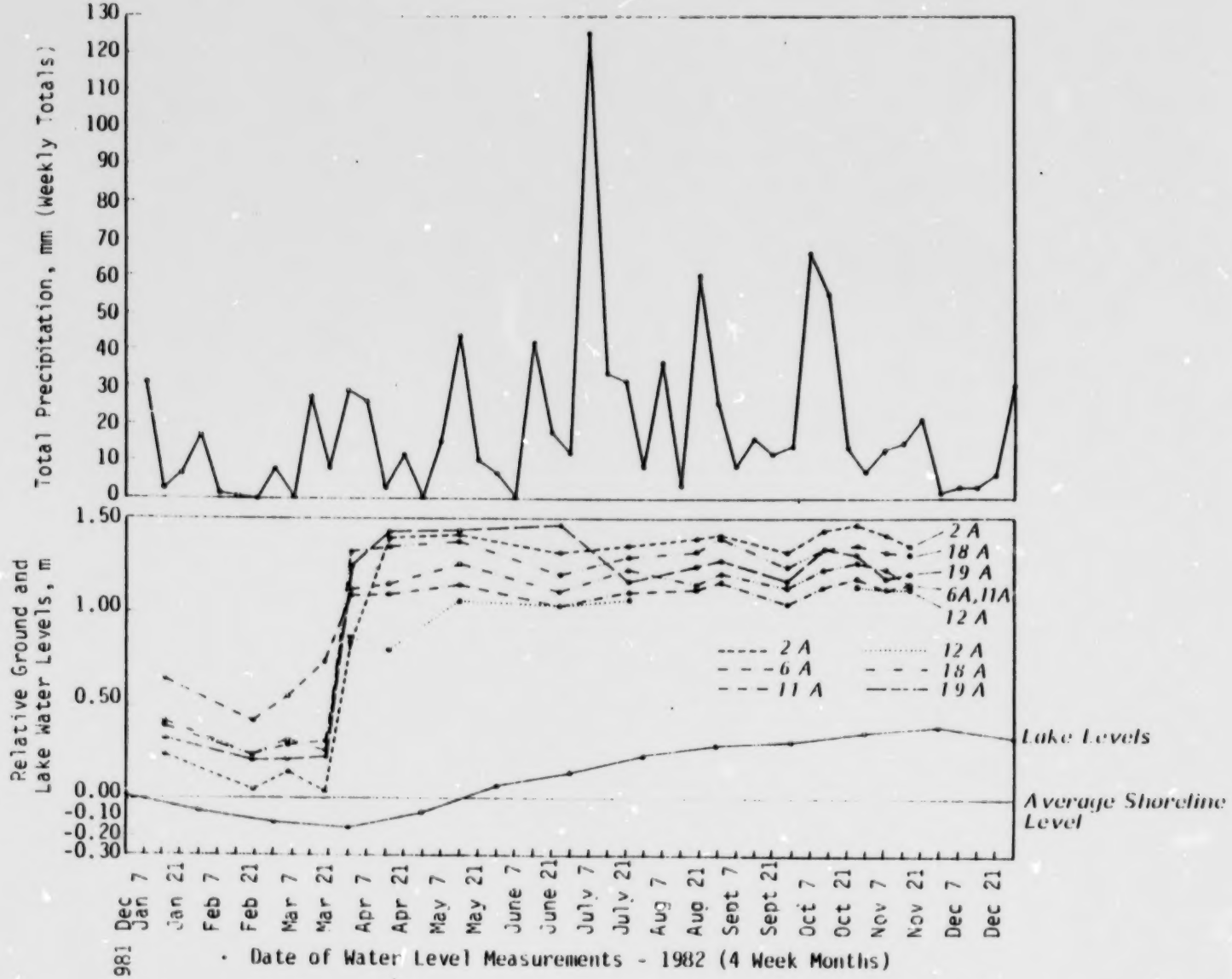



FIGURE 2

ASH CELL GROUND AND LAKE WATER LEVELS (m)*
AND TOTAL PRECIPITATION (mm), 1982
*(RELATIVE TO AVERAGE LAKE SHORELINE LEVEL OF 182.88 m)

to the end of November. During 1980 and 1982 water levels were significantly lower during the spring months after which they rose sharply at the end of March. During the summer of 1980 some drop in water levels occurred in August and an increase again in September. This pattern is not as prominent in the 1982 levels which remained essentially constant from the end of March to the middle of November.

As observed in the previous years, the 1982 groundwater level data show that changes in groundwater levels are seasonal and probably influenced by precipitation rather than by changes in lake water levels.

3. Groundwater Quality

The data on the chemical characteristics of the groundwaters sampled in 1982 are summarized in Appendix A. The major ion chemistry of the waters, illustrated by Piper plots and summarized by ion balances, is given in Appendix B. The main chemical characteristics of the groundwaters from locations surrounding the ash cell are discussed below.

pH Levels

The 1982 pH levels of the groundwaters examined are summarized in Table V.

It is apparent from the summary that the pH values determined at TBTGS on fresh samples and at Research on 'aged' samples differ. The Research values range from a low of 6.1 in the water from piezometer 9B, sampled in October, to a high of 8.4 in the water from piezometers 16B (May), 18B (November) and 20B (May). The TBTGS values range from a low of 5.9 in the water from piezometer 1A in the May sample to a high of 7.3 in the water from piezometer 19B in the July sample. In most cases, and especially in the May samples, the pH levels of the waters tested at Research are higher than those obtained at TBTGS. This is probably due to changes in the chemical equilibrium of the water caused by changes in the water's temperature, dissolved gas concentrations and other chemical reactions.

Although the field and laboratory pH levels differ somewhat, the 1982 pH levels are similar to those obtained during the previous surveys. These pH levels resemble those associated with normal surface or groundwaters. These pH levels do not indicate any significant leachate contamination of the groundwaters examined.

Alkalinity Levels

The 1982 alkalinity levels of the groundwaters examined are summarized in Table VI. All alkalinity values represent the bicarbonate ($HCO_3$) alkalinity expressed in mg/L as $CaCO_3$.

## TABLE V

ASH CELL GROUNDWATER QUALITY - TBTGS- 1982

TEST : PH

| LOCATION | SAMPLING DATE 820519 | 820520 * | 820723 | 820724* | 821015 | 821016* | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| 01A | 8·0 | 5·9 | 7·4 | 6·5 | 8·1 | 6·7 | 7·1 | 6·4 |
| 01B | 8·2 | 6·0 | 7·0 | 6·8 | 7·2 | 6·8 | 7·0 | 6·8 |
| 02A | 8·1 | 6·5 | 7·1 | 7·2 | 7·0 | 7·0 | 7·0 | 6·8 |
| 02B | 8·0 | 6·7 | 7·3 | 7·0 | 6·9 | 6·9 | 7·6 | 6·7 |
| 03A | 8·0 | 6·7 | 7·0 | 7·0 | 7·4 | 6·7 | 7·6 | 6·6 |
| 03B | 7·9 | 6·6 | 7·4 | 6·7 | 7·1 | 6·8 | 8·1 | 6·8 |
| 04A | 8·0 | 6·5 | 7·2 | 6·8 | 7·2 | 6·8 | 7·1 | 6·8 |
| 04B | 8·0 | 6·5 | 6·9 | 7·0 | 7·0 | 6·8 | -- | 6·7 |
| 04C | 8·1 | 6·6 | 6·9 | 6·6 | 7·1 | 6·9 | 7·1 | 6·6 |
| 05A | 7·8 | 6·6 | 6·8 | 7·0 | 6·7 | 7·0 | 6·9 | 6·4 |
| 05B | 8·0 | 6·7 | 6·7 | 7·0 | 6·3 | 6·8 | 7·1 | 6·5 |
| 06A | 7·6 | 6·4 | 6·7 | 7·0 | 6·8 | 6·9 | 6·8 | 6·5 |
| 06B | 7·9 | 6·2 | 7·0 | 6·8 | 6·7 | 6·9 | 6·9 | 6·6 |
| 07A | 7·7 | 6·5 | 6·6 | 7·1 | 6·7 | 6·9 | 7·2 | 6·7 |
| 07B | 7·5 | 6·2 | 6·8 | 7·2 | 6·7 | 6·9 | 6·8 | 6·6 |
| 08A | 7·6 | 6·6 | 6·6 | 7·2 | 6·5 | 6·5 | 6·9 | 6·7 |
| 08B | 8·1 | 6·6 | 7·0 | 6·9 | -- | -- | 7·6 | 6·8 |
| 09A | 8·2 | 6·5 | 7·1 | 7·0 | 6·6 | 6·9 | 7·0 | 6·2 |
| 09B | 8·1 | 6·5 | 6·7 | 6·8 | 6·1 | 6·2 | 7·5 | 6·4 |
| 10A | 8·2 | 6·5 | 6·8 | 7·1 | 7·1 | 6·7 | 6·8 | 6·5 |
| 10B | 8·0 | 6·8 | 7·2 | 7·0 | 7·2 | 6·8 | 7·0 | 6·6 |
| 11A | 8·2 | 6·8 | 7·1 | 6·8 | 6·7 | 6·8 | 6·8 | 6·4 |
| 11B | 7·9 | 6·7 | 6·9 | 7·0 | 6·6 | 6·7 | 7·4 | 6·6 |
| 12A | 7·8 | 6·5 | 7·2 | 6·8 | -- | -- | 8·0 | 6·6 |
| 12B | 7·7 | 6·6 | 7·4 | 6·8 | -- | -- | 7·3 | 6·7 |
| 13A | 8·0 | 6·3 | 6·7 | 6·8 | 6·5 | 6·7 | 6·6 | 6·5 |
| 13B | 7·8 | 6·1 | 7·3 | 6·7 | 6·4 | 6·6 | 7·6 | 6·4 |
| 15A | 7·2 | 6·4 | 6·7 | 6·8 | 6·5 | 6·5 | 6·7 | 6·3 |
| 15B | 7·8 | 6·6 | 6·8 | 6·6 | 6·4 | 6·5 | 7·5 | 6·4 |
| 16A | 7·6 | 6·6 | 6·6 | 6·8 | 6·3 | 6·4 | 6·4 | 6·4 |
| 16B | 8·4 | 6·5 | 7·0 | 6·3 | 7·0 | 6·6 | 6·9 | 6·5 |
| 18A | 8·3 | 7·0 | 7·9 | 6·9 | 7·9 | 6·5 | 7·4 | 6·6 |
| 18B | 7·8 | 6·9 | 7·7 | 6·8 | 8·2 | 6·9 | 8·4 | 6·7 |
| 19A | -- | -- | 7·8 | 7·1 | -- | 7·0 | 7·4 | 6·4 |
| 19B | 7·6 | 7·0 | 7·3 | 7·3 | -- | 7·0 | 7·0 | 6·6 |
| 20A | 8·3 | 6·9 | 7·8 | 7·0 | 7·2 | 6·7 | 7·6 | 6·6 |
| 20B | 8·4 | 6·8 | 7·1 | 6·6 | 6·8 | 6·7 | 7·1 | 6·7 |
| 21A | 7·9 | 6·8 | -- | -- | 6·8 | 7·0 | 7·6 | 6·5 |
| 21B | 7·9 | 6·9 | -- | -- | -- | 6·6 | 6·7 | 6·2 |
| 22A | 7·9 | 6·8 | -- | -- | 7·3 | 7·0 | 7·7 | 6·8 |
| 22B | 8·1 | 6·6 | -- | -- | 7·4 | 6·8 | 7·0 | 6·8 |

* TBTGS data obtained from fresh samples taken on the date before that shown.

## TABLE VI

ASH CELL GROUNDWATER QUALITY - TBTGS- 1982

TEST : ALKHCO3 AS $CaCO_3$ mg/L

| LOCATION | SAMPLING DATE 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| 01A | 440· | 360· | 630· | 670· | 680· | 700· | 670· | 660· |
| 01B | 260· | 210· | 520· | 600· | 430· | 430· | 440· | 430· |
| 02A | 250· | 230· | 330· | 400· | 380· | 390· | 390· | 400· |
| 02B | 260· | 300· | 400· | 390· | 280· | 510· | 520· | 500· |
| 03A | 330· | 330· | 420· | 450· | 460· | 450· | 440· | 440· |
| 03B | 290· | 160· | 430· | 470· | 570· | 560· | 550· | — |
| 04A | 320· | -- | 320· | 360· | 340· | 340· | 340· | 320· |
| 04B | 390· | -- | 460· | 470· | 640· | 630· | -- | -- |
| 04C | 460· | -- | 470· | 490· | 470· | 490· | 470· | 470· |
| 05A | 380· | -- | 370· | 390· | 360· | 380· | 350· | 360· |
| 05B | 280· | -- | 270· | -- | 260· | 290· | 280· | 280· |
| 06A | 580· | -- | 600· | 690· | 630· | 690· | 280· | 580· |
| 06B | 450· | 290· | 740· | 780· | 780· | 900· | 600· | 560· |
| 07A | 320· | 290· | 340· | 340· | 340· | 380· | 350· | 290· |
| 07B | 300· | 250· | 330· | 280· | 450· | 510· | 560· | 560· |
| 08A | 390· | 310· | 390· | 430· | 420· | 510· | 460· | 450· |
| 08B | 290· | 300· | 430· | 410· | -- | -- | 650· | 640· |
| 09A | 250· | -- | 280· | 240· | 290· | 280· | 280· | 310· |
| 09B | 250· | 250· | 220· | 180· | 140· | 220· | 220· | -- |
| 10A | 360· | 300· | 360· | 310· | 370· | 380· | 370· | 390· |
| 10B | 460· | 500· | 480· | 460· | 470· | 460· | 490· | 400· |
| 11A | 410· | 310· | 420· | 460· | 440· | 430· | 440· | 440· |
| 11B | 470· | 400· | 510· | 560· | 580· | 600· | 600· | 670· |
| 12A | 540· | 130· | 510· | 490· | -- | -- | 510· | -- |
| 12B | 500· | 460· | 530· | 510· | -- | -- | 640· | 670· |
| 13A | 280· | 260· | 280· | 270· | 290· | 310· | 290· | 290· |
| 13B | 240· | -- | 200· | -- | 240· | 250· | 240· | -- |
| 15A | 350· | 250· | 340· | 360· | 350· | 340· | 330· | 350· |
| 15B | 420· | 310· | 450· | 490· | 430· | 460· | 450· | -- |
| 16A | 310· | 300· | 290· | 360· | 180· | 220· | 160· | 170· |
| 16B | 320· | 350· | 320· | 390· | 260· | 260· | 190· | 200· |
| 18A | 250· | 260· | 360· | -- | 270· | 320· | 340· | 370· |
| 18B | 210· | 240· | 240· | 360· | 320· | 380· | 290· | -- |
| 19A | -- | -- | 170· | -- | -- | 230· | 220· | 220· |
| 19B | 58· | 500· | 98· | -- | -- | 110· | 91· | -- |
| 20A | 340· | 400· | 460· | 460· | 450· | 460· | 460· | 470· |
| 20B | 280· | 300· | 310· | 290· | 390· | 400· | 400· | 420· |
| 21A | 190· | 200· | -- | -- | 170· | 180· | 200· | 230· |
| 21B | 110· | 150· | -- | -- | -- | 100· | 98· | -- |
| 22A | 510· | 340· | -- | -- | 520· | 510· | 520· | 520· |
| 22B | 420· | 420· | -- | -- | 490· | 500· | 490· | 500· |

* TBTGS data obtained on fresh samples taken on the date before that shown.

As with pH levels the alkalinity values obtained at TBTGS on fresh samples differ somewhat from those obtained at Research. The reason is the same as that given for the pH differences.

The alkalinity values of the groundwaters examined at Research ranged from a low of 58 mg/L, as $CaCO_3$, in the water from piezometer 19B to a high of 778 mg/L in the water from piezometer 6B. The TBTGS values ranged from a low of 100 mg/L in the water from piezometer 21B (110 mg/L in 19B) to a high of 900 mg/L in the water also from piezometer 6B. Low alkalinity levels (<200 mg/L) were present on at least one occasion in waters from piezometers 3B, 9B, 12A, 13B, 16A, 16B, 19A, 19B, 21A and 21 B. High alkalinity levels (>500 mg/L) were present on at least one occasion in waters from piezometers 1A, 1B, 2B, 3B, 4B, 6A, 6B, 7B, 8A, 8B, 10B, 11B, 12A, 12B, 19B, 22A and 22B. Although there does not appear to be a consistent pattern for these levels the lowest alkalinity levels were present in waters from piezometers 19B, 21A and 21B on the north side and somewhat distant from the cell. The highest levels were present in waters from piezometers 1A, 1B, 4B, 6A, 6B, 8B, 11B, 12B, 22A and 22B. With the exception of piezometer 12B, the remaining piezometers are all located on the west, south and east sides and in close proximity to the perimeter of the ash cell.

During 1982, and as observed in the previous studies, higher alkalinity levels existed in most waters sampled during the summer and the fall months. This appears to support the speculation expressed previously/3/ that variations in groundwaters' alkalinities could be seasonal and influenced by precipitation, producing waters of low alkalinities in the spring, and by enhanced microbiological activity, producing waters of higher alkalinities in the summer and the fall months. Because of this possibility and the inconsistent pH and alkalinity levels obtained, a realistic assessment of leachate contamination of the groundwaters is difficult to make.

Sulphate

As shown in Table VII, the sulphate levels in groundwaters sampled during 1982 ranged from <1 mg/L $SO_4$ in several piezometers to a high of 300 mg/L in piezometer 6B. Other high values (>100 mg/L) were present in waters from piezometers 1B, 3B, 4B, 5B, 9A, 16A, 16B, 20A, 20B and 22B. All of these piezometers are located close to the perimeter of the ash cell.

As was observed in the past, there exist wide variations in sulphate levels in some wells, such as well 6B that had a high of 300 mg/L $SO_4$ on May 19 and a low of 6.5 mg/L $SO_4$ on October 15. There does not appear to be any close correlation between $SO_4$ levels with the lake or groundwater levels nor with sampling dates.

## TABLE VII

ASH CELL GROUNDWATER QUALITY - TBTGS- 1982

TEST : SO4 (mg/L)

| LOCATION | SAMPLING DATE 820519 | 820520 | 820723 | 820724 | 821015 | 821016 | 821118 | 821119 |
|---|---|---|---|---|---|---|---|---|
| 01A | 65· | -- | 39· | -- | 23· | -- | 50· | -- |
| 01B | 170· | -- | 68· | -- | 120· | -- | 54· | -- |
| 02A | 63· | -- | 72· | -- | 48· | -- | 48· | -- |
| 02B | 46· | -- | 25· | -- | 9·5 | -- | 17· | -- |
| 03A | 43· | -- | 17· | -- | 14· | -- | 33· | -- |
| 03B | 150· | -- | 36· | -- | 16· | -- | 5·9 | -- |
| 04A | 14· | -- | ·90 | -- | 1·5 | -- | ·89 | -- |
| 04B | 170· | -- | 190· | -- | 22· | -- | -- | -- |
| 04C | 11· | -- | 4·3 | -- | 2·9 | -- | 4·2 | -- |
| 05A | 14· | -- | 4·3 | -- | 9·0 | -- | 13· | -- |
| 05B | 150· | -- | 25· | -- | 25· | -- | 30· | -- |
| 06A | 1·1 | -- | 1·8 | -- | ·10 | -- | 18· | -- |
| 06B | 300· | -- | 45· | -- | 6·5 | -- | 43· | -- |
| 07A | 35· | -- | 6·4 | -- | 14· | -- | 24· | -- |
| 07B | 11· | -- | 3·2 | -- | 84· | -- | 52· | -- |
| 08A | 2·6 | -- | ·80 | -- | 6·4 | -- | 8·3 | -- |
| 08B | 1·4 | -- | 35· | -- | -- | -- | 29· | -- |
| 09A | 280· | -- | ·70 | -- | ·71 | -- | 2·4 | -- |
| 09B | 7·5 | -- | 3·4 | -- | ·58 | -- | ·64 | -- |
| 10A | 6·4 | -- | 1·9 | -- | ·52 | -- | ·55 | -- |
| 10B | 3·5 | -- | 1·4 | -- | ·75 | -- | 1·3 | -- |
| 11A | 1·2 | -- | 1·1 | -- | ·75 | -- | ·67 | -- |
| 11B | 10· | -- | 4·4 | -- | 2·2 | -- | 2·0 | -- |
| 12A | 13· | -- | 8·5 | -- | -- | -- | 2·4 | -- |
| 12B | 16· | -- | 1·3 | -- | -- | -- | ·53 | -- |
| 13A | 5·5 | -- | 1·6 | -- | 8·1 | -- | 12· | -- |
| 13B | 28· | -- | 44· | -- | 13· | -- | 11· | -- |
| 15A | 3·0 | -- | 1·2 | -- | ·32 | -- | 2·8 | -- |
| 15B | 28· | -- | 6·8 | -- | 4·0 | -- | 8·6 | -- |
| 16A | 19· | -- | 30· | -- | 190· | -- | 210· | -- |
| 16B | 64· | -- | 33· | -- | 120· | -- | 240· | -- |
| 18A | 59· | -- | 26· | -- | 63· | -- | 9·7 | -- |
| 18B | 40· | -- | 66· | -- | 28· | -- | 37· | -- |
| 19A | -- | -- | 29· | -- | -- | -- | 21· | -- |
| 19B | 36· | -- | 34· | -- | -- | -- | 14· | -- |
| 20A | 75· | -- | 92· | -- | 93· | -- | 120· | -- |
| 20B | 89· | -- | 110· | -- | 95· | -- | 110· | -- |
| 21A | 30· | -- | -- | -- | 18· | -- | 17· | -- |
| 21B | 57· | -- | -- | -- | -- | -- | 7·8 | -- |
| 22A | 25· | -- | -- | -- | 27· | -- | 32· | -- |
| 22B | 190· | -- | -- | -- | 110· | -- | 120· | -- |

Sodium

The data summarized in Table VIII shows sodium levels in the groundwaters ranged from a low of 5.3 mg/L Na in piezometer 2B on May 19, to a high of 71 mg/L in piezometer 4B. Other high levels (>50 mg/L) were present in waters from piezometers 20A and 22B. As shown in Figure 3, the 1982 Na levels are essentially similar to the levels of the previous years except for 1980 when high Na levels were present. It was in 1979 and 1980 that placing of wet and dry fly ash from Unit 1 was begun. This could have accounted for the high Na levels.

As observed in the previous years, high Na levels were also present in 1982 in waters close to the northwest corner of the cell (piezometers 22A, 22B, 21B, 20A, 18A and 1A), where most of the ash has been deposited. Other locations where high Na levels were found were from piezometer nests 4 and 10 where fresh ash was deposited. The high levels present in waters from piezometers 6A and 6B, south of sub-cell No 8, where no ash has been stored, are difficult to explain but could possibly be due to drainage from the sub-cells covered with ash.

Because equally high or higher Na levels were present in the groundwaters in the past, the 1982 Na levels do not indicate any adverse change in groundwater quality.

Magnesium

The magnesium levels, summarized in Table IX, fall in a narrow range. They range from a low of 13 mg/L Mg, in piezometer 21B, to a high of 79 mg/L in piezometer 6B. Low magnesium levels are present in waters from piezometer nests 19 and 21, both north and away from the ash pile. High levels are generally present in waters from piezometer nests (such as 1, 2, 3, 6 and 22) close to the ash pile. However, high Mg levels were also present in waters from piezometers 12A and 12B east and some distance away from the ash pile. This could be due to some drainage peculiarities, possibly the result of the road constructed from bottom ash.

As shown in Figure 4, the 1982 Mg levels are somewhat higher than they were in 1980 and 1981, suggesting possible increased leachate contamination. However, during 1978 and 1979, Mg levels were significantly higher than during the subsequent years. As Mg is subject to change by pH and alkalinity levels, Mg is not considered to be a reliable indicator of leachate contamination. The 1983 data might be more indicative of the apparent slight increase of the Mg levels.

## TABLE VIII

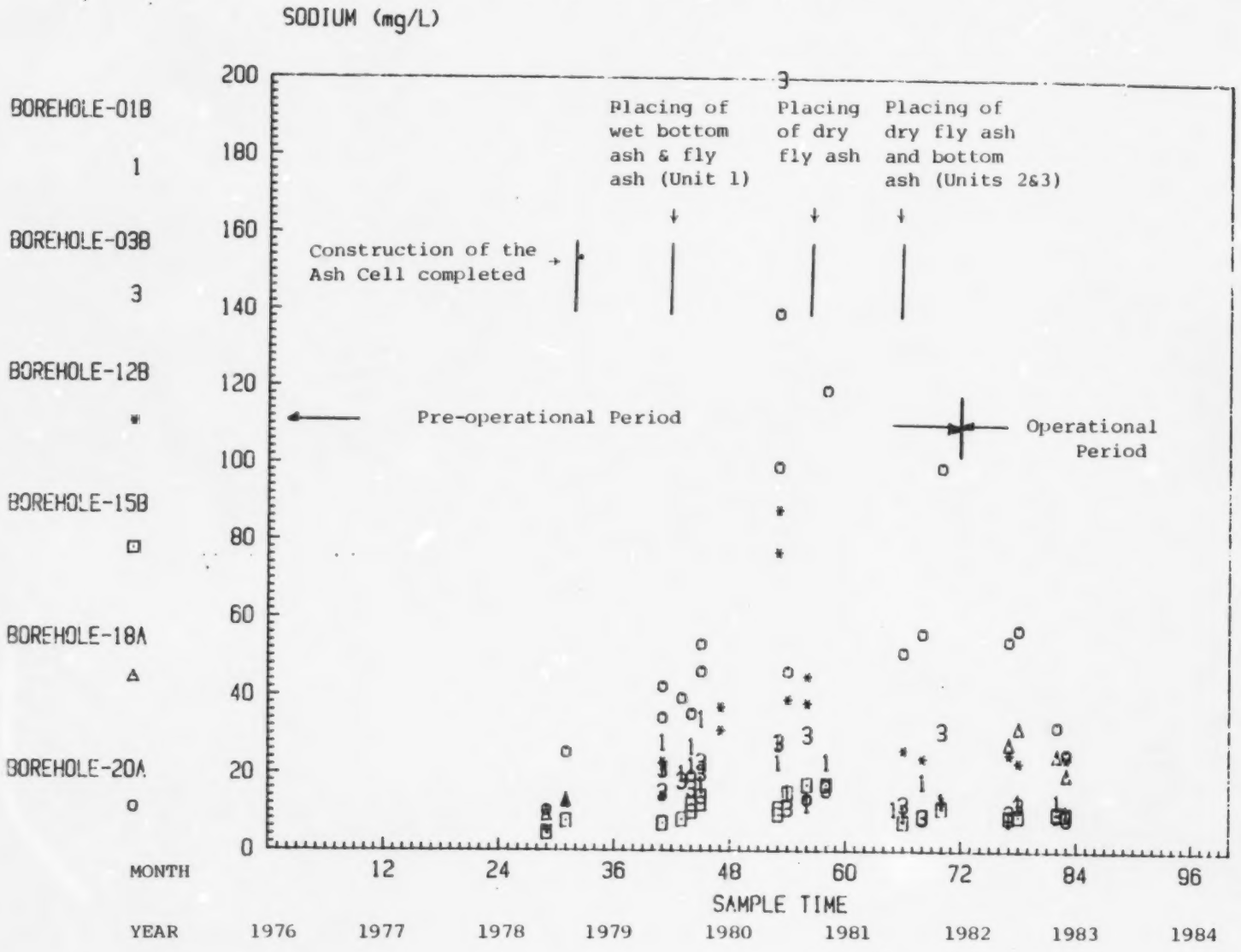
ASH CELL GROUNDWATER QUALITY - TBTGS- 1982

TEST : NA (mg/L)

| LOCATION | SAMPLING DATE 820519 | 820520 | 820723 | 820724 | 821015 | 821016 | 821118 | 821119 |
|---|---|---|---|---|---|---|---|---|
| 01A | 21· | -- | 20· | -- | 31· | -- | 27· | -- |
| 01B | 8·5 | -- | 13· | -- | 13· | -- | 10· | -- |
| 02A | 11· | -- | 11· | -- | 12· | -- | 11· | -- |
| 02B | 5·3 | -- | 8·0 | -- | 8·7 | -- | 8·5 | -- |
| 03A | 11· | -- | 13· | -- | 18· | -- | 17· | -- |
| 03B | 10· | -- | 12· | -- | 9·6 | -- | 8·8 | -- |
| 04A | 14· | -- | 16· | -- | 19· | -- | 16· | -- |
| 04B | 42· | -- | 52· | -- | 62· | -- | 71· | -- |
| 04C | 20· | -- | 14· | -- | 15· | -- | 14· | -- |
| 05A | 14· | -- | 15· | -- | 14· | -- | 13· | -- |
| 05B | 11· | -- | 9·0 | -- | 7·9 | -- | 8·1 | -- |
| 06A | 22· | -- | 21· | -- | 30· | -- | 26· | -- |
| 06B | 29· | -- | 25· | -- | 18· | -- | 14· | -- |
| 07A | 13· | -- | 15· | -- | 14· | -- | 14· | -- |
| 07B | 9·8 | -- | 11· | -- | 14· | -- | 14· | -- |
| 08A | 9·7 | -- | 10· | -- | 8·7 | -- | 12· | -- |
| 08B | 13· | -- | 15· | -- | -- | -- | 38· | -- |
| 09A | 11· | -- | 12· | -- | 11· | -- | 11· | -- |
| 09B | 6·8 | -- | 8·0 | -- | 8·4 | -- | 7·3 | -- |
| 10A | 13· | -- | 16· | -- | 16· | -- | 15· | -- |
| 10B | 45· | -- | 39· | -- | 46· | -- | 41· | -- |
| 11A | 20· | -- | 19· | -- | 21· | -- | 22· | -- |
| 11B | 15· | -- | 17· | -- | 15· | -- | 16· | -- |
| 12A | 18· | -- | 27· | -- | -- | -- | 32· | -- |
| 12B | 25· | -- | 23· | -- | -- | -- | 24· | -- |
| 13A | 8·1 | -- | 12· | -- | 11· | -- | 8·6 | -- |
| 13B | 11· | -- | 12· | -- | 9·6 | -- | 9·2 | -- |
| 15A | 10· | -- | 12· | -- | 11· | -- | 11· | -- |
| 15B | 8·8 | -- | 9·0 | -- | 9·9 | -- | 9·6 | -- |
| 16A | 8·4 | -- | 10· | -- | 9·8 | -- | 11· | -- |
| 16B | 20· | -- | 10· | -- | 8·5 | -- | 9·1 | -- |
| 18A | 28· | -- | 32· | -- | 25· | -- | 20· | -- |
| 18B | 8·6 | -- | 13· | -- | 9·7 | -- | 8·9 | -- |
| 19A | -- | -- | 15· | -- | 13· | -- | 8·8 | -- |
| 19B | 12· | -- | 21· | -- | 14· | -- | 7·3 | -- |
| 20A | 55· | -- | 58· | -- | 33· | -- | 26· | -- |
| 20B | 14· | -- | 14· | -- | 13· | -- | 12· | -- |
| 21A | 9·2 | -- | -- | -- | 9·2 | -- | 8·4 | -- |
| 21B | 23· | -- | -- | -- | 20· | -- | 19· | -- |
| 22A | 29· | -- | -- | -- | 33· | -- | 35· | -- |
| 22B | 41· | -- | -- | -- | 55· | -- | 39· | -- |

# ASH CELL GROUNDWATER-TBTGS-1982

## Fig. 3 SODIUM vs TIME



## TABLE IX

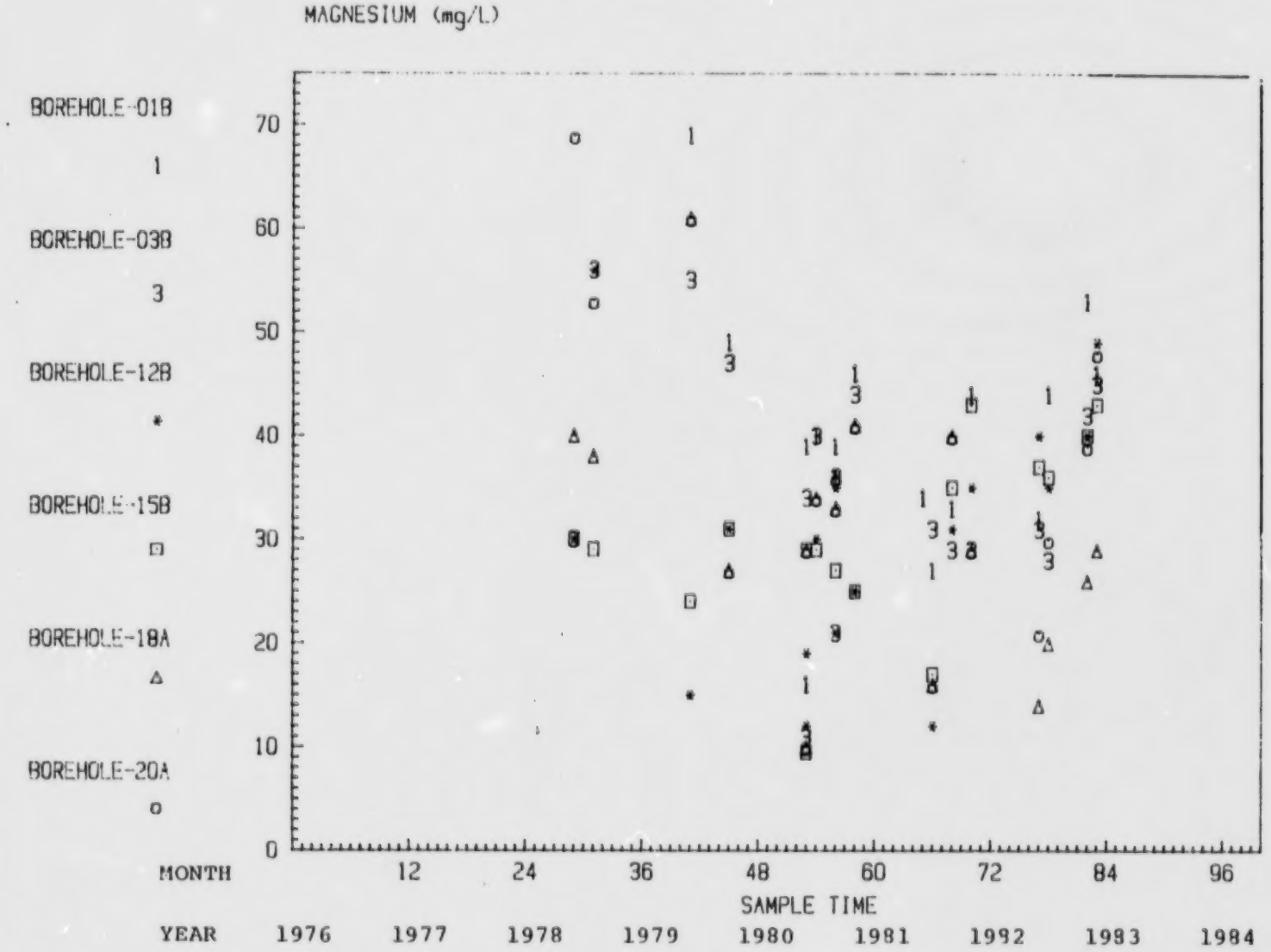
ASH CELL GROUNDWATER QUALITY - TBTGS- 1982

TEST : MG (mg/L)

| LOCATION | SAMPLING DATE 820519 | 820520 | 820723 | 820724 | 821015 | 821016 | 821118 | 821119 |
|---|---|---|---|---|---|---|---|---|
| 01A | 51. | -- | 51. | -- | 71. | -- | 65. | -- |
| 01B | 32. | -- | 44. | -- | 53. | -- | 46. | -- |
| 02A | 28. | -- | 32. | -- | 40. | -- | 39. | -- |
| 02B | 22. | -- | 22. | -- | 35. | -- | 35. | -- |
| 03A | 36. | -- | 31. | -- | 40. | -- | 40. | -- |
| 03B | 31. | -- | 28. | -- | 42. | -- | 45. | -- |
| 04A | 26. | -- | 22. | -- | 27. | -- | 27. | -- |
| 04B | 33. | -- | 23. | -- | 37. | -- | 43. | -- |
| 04C | 39. | -- | 35. | -- | 40. | -- | 40. | -- |
| 05A | 31. | -- | 30. | -- | 33. | -- | 32. | -- |
| 05B | 28. | -- | 22. | -- | 26. | -- | 26. | -- |
| 06A | 51. | -- | 45. | -- | 56. | -- | 53. | -- |
| 06B | 64. | -- | 65. | -- | 79. | -- | 74. | -- |
| 07A | 31. | -- | 26. | -- | 32. | -- | 35. | -- |
| 07B | 27. | -- | 27. | -- | 47. | -- | 51. | -- |
| 08A | 34. | -- | 31. | -- | 40. | -- | 42. | -- |
| 08B | 26. | -- | 46. | -- | -- | -- | 59. | -- |
| 09A | 48. | -- | 23. | -- | 28. | -- | 27. | -- |
| 09B | 19. | -- | 18. | -- | 19. | -- | 19. | -- |
| 10A | 30. | -- | 29. | -- | 35. | -- | 35. | -- |
| 10B | 33. | -- | 34. | -- | 40. | -- | 45. | -- |
| 11A | 41. | -- | 36. | -- | 44. | -- | 42. | -- |
| 11B | 45. | -- | 46. | -- | 60. | -- | 62. | -- |
| 12A | 55. | -- | 43. | -- | -- | -- | 48. | -- |
| 12B | 40. | -- | 35. | -- | -- | -- | 49. | -- |
| 13A | 26. | -- | 24. | -- | 28. | -- | 29. | -- |
| 13B | 24. | -- | 22. | -- | 26. | -- | 27. | -- |
| 15A | 34. | -- | 30. | -- | 32. | -- | 31. | -- |
| 15B | 37. | -- | 36. | -- | 40. | -- | 43. | -- |
| 16A | 28. | -- | 30. | -- | 32. | -- | 37. | -- |
| 16B | 14. | -- | 19. | -- | 23. | -- | 33. | -- |
| 18A | 14. | -- | 20. | -- | 26. | -- | 29. | -- |
| 18B | 17. | -- | 19. | -- | 30. | -- | 29. | -- |
| 19A | -- | -- | 18. | -- | 21. | -- | 21. | -- |
| 19B | 12. | -- | 11. | -- | 12. | -- | 11. | -- |
| 20A | 21. | -- | 30. | -- | 39. | -- | 48. | -- |
| 20B | 29. | -- | 34. | -- | 39. | -- | 43. | -- |
| 21A | 21. | -- | -- | -- | 18. | -- | 22. | -- |
| 21B | 17. | -- | -- | -- | 13. | -- | 11. | -- |
| 22A | 44. | -- | -- | -- | 45. | -- | 44. | -- |
| 22B | 44. | -- | -- | -- | 39. | -- | 49. | -- |

# ASH CELL GROUNDWATER--TBTGS--1982

Fig. 4 MAGNESIUM vs TIME






84-67

## Boron and Strontium

The 1982 concentrations of boron and strontium, the main ash leachate indicators, are summarized in Tables X and XI.

Boron levels ranged from less than the detection limit (<0.5 mg/L) of the test method used to a high of 3.6 mg/L in piezometer 1A, sampled in October. As illustrated in Figure 5, the boron levels during 1982 were generally higher than during the previous years, possibly suggesting increased ash leachate contamination.

Strontium levels ranged from a low of 0.03 mg/L in piezometer 19B to a high of 0.52 mg/L in piezometer 12B. The three high values of 2.0, 1.6 and 1.0 mg/L in piezometers 1A, 5B and 7A respectively, for the May samples, are being disregarded as the detection limit of the test method used for Sr determination of that set of samples was high and therefore had low precision.

The remaining strontium levels for 1982 appear to be essentially at the same levels as during the previous years, as shown in Figure 6. These data show no significant change in the degree of groundwater contamination by ash leachate contradicting the indicated effect by the boron levels.

Possible further changes in boron and strontium levels during 1983 might clarify this apparent contradictory effect and indicate if there exists an actual trend in B and Sr concentrations in the groundwaters.

## Trace Metals

A cursory examination of the 1982 and of the previously obtained data on trace metals concentrations in the groundwaters around the ash cell does not show any apparent significant changes or trends. However, it is planned to examine these data in detail, possibly in 1984, when all the data will be stored in the computer and be accessible for quick and easy comparison and statistical analysis.

## Piper Plots

The 1982 data represented by the Piper Plots, shown in Appendix B, show that the groundwaters in the vicinity of the ash storage area resemble natural surface or groundwaters in which the alkaline earths and weak acid anions ($HCO_3$ and $CO_3$) predominate. A typical example is shown in Figure 7. There is some indication, however, as in Figure 8, that waters from several piezometers, such as 1B, 3B, 4B, 5B, 6B, 9A, 16AB, 20AB and 22B, containing higher than normal $SO_4$ concentrations (>100 mg/L $SO_4$), are changing. The 1983 data should confirm this apparent trend.

## TABLE X

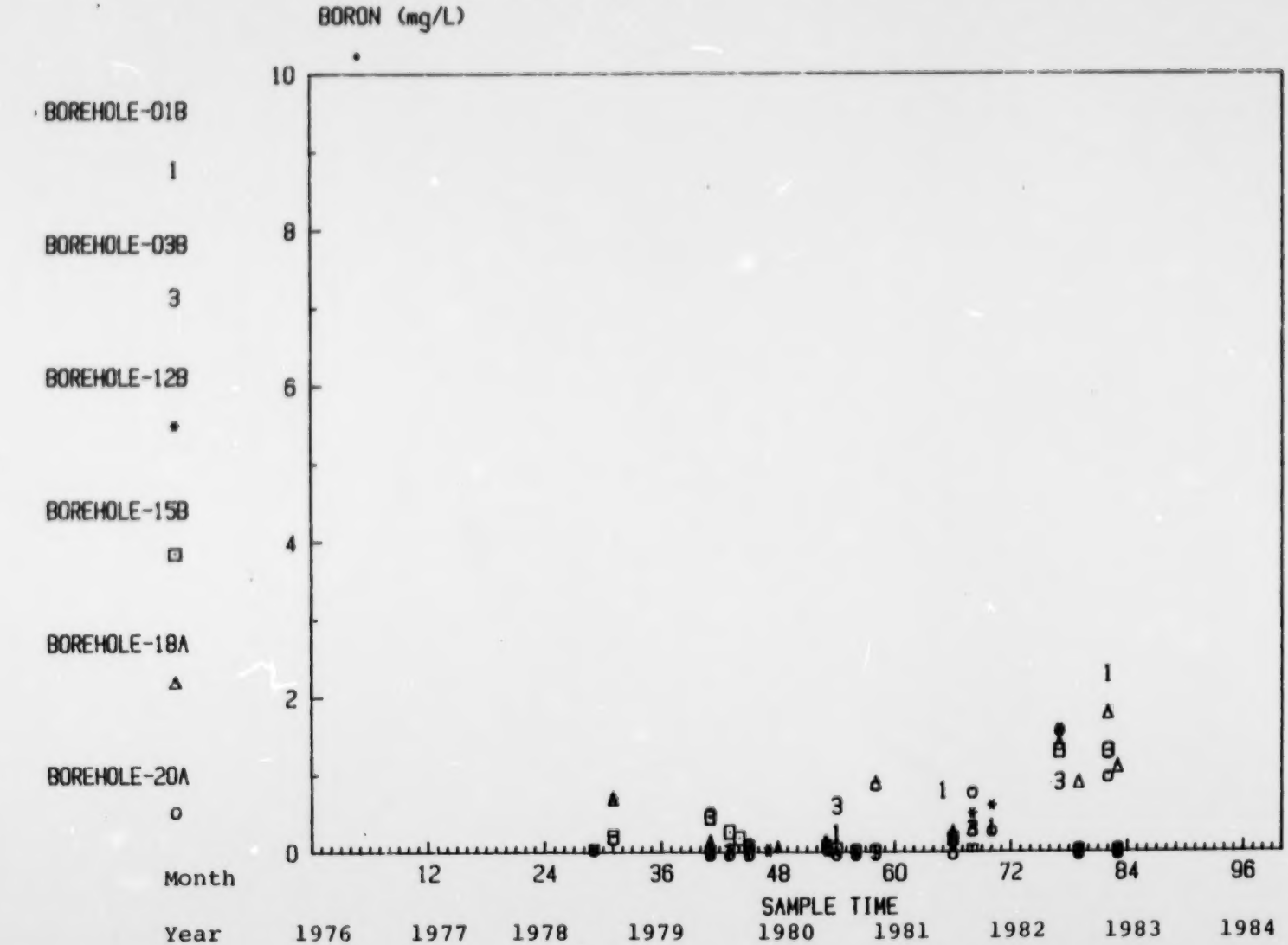
ASH CELL GROUNDWATER QUALITY - TBTGS- 1982

TEST : B (mg/L)

| LOCATION | SAMPLING DATE 820519 | 820520 | 820723 | 820724 | 821015 | 821016 | 821118 | 821119 |
|---|---|---|---|---|---|---|---|---|
| 01A | 1·0 | -- | <·50 | -- | 3·6 | -- | ·60 | -- |
| 01B | 1·5 | -- | <·50 | -- | 2·3 | -- | <·50 | -- |
| 02A | 1·0 | -- | <·50 | -- | 1·0 | -- | <·50 | -- |
| 02B | 1·0 | -- | <·50 | -- | 2·5 | -- | <·50 | -- |
| 03A | ·80 | -- | <·50 | -- | 1·0 | -- | <·50 | -- |
| 03B | ·90 | -- | <·50 | -- | 1·3 | -- | <·50 | -- |
| 04A | 1·7 | -- | <·50 | -- | 2·1 | -- | <·50 | -- |
| 04B | 1·3 | -- | <·50 | -- | 1·2 | -- | -- | -- |
| 04C | <·50 | -- | <·50 | -- | 1·6 | -- | <·50 | -- |
| 05A | 1·1 | -- | <·50 | -- | 1·2 | -- | <·50 | -- |
| 05B | 1·5 | -- | <·50 | -- | 1·4 | -- | ·50 | -- |
| 06A | 1·2 | -- | <·50 | -- | 1·6 | -- | <·50 | -- |
| 06B | <·50 | -- | <·50 | -- | 1·8 | -- | <·50 | -- |
| 07A | ·90 | -- | <·50 | -- | 1·3 | -- | <·50 | -- |
| 07B | 1·1 | -- | <·50 | -- | 1·7 | -- | <·50 | -- |
| 08A | 1·3 | -- | <·50 | -- | 1·0 | -- | <·50 | -- |
| 08B | ·80 | -- | <·50 | -- | -- | -- | <·50 | -- |
| 09A | 1·1 | -- | <·50 | -- | 1·3 | -- | <·50 | -- |
| 09B | 1·1 | -- | <·50 | -- | 1·2 | -- | <·50 | -- |
| 10A | ·90 | -- | <·50 | -- | 1·8 | -- | <·50 | -- |
| 10B | ·90 | -- | <·50 | -- | 2·9 | -- | <·50 | -- |
| 11A | 1·2 | -- | <·50 | -- | 1·2 | -- | <·50 | -- |
| 11B | 1·1 | -- | <·50 | -- | <·50 | -- | <·50 | -- |
| 12A | 1·4 | -- | <·50 | -- | -- | -- | <·50 | -- |
| 12B | 1·6 | -- | <·50 | -- | -- | -- | <·50 | -- |
| 13A | 1·2 | -- | <·50 | -- | 1·2 | -- | <·50 | -- |
| 13B | 1·2 | -- | <·50 | -- | 1·6 | -- | <·50 | -- |
| 15A | 1·5 | -- | <·50 | -- | 1·4 | -- | <·50 | -- |
| 15B | 1·3 | -- | <·50 | -- | 1·3 | -- | <·50 | -- |
| 16A | 1·2 | -- | <·50 | -- | 1·8 | -- | <·50 | -- |
| 16B | 1·0 | -- | <·50 | -- | 1·6 | -- | <·50 | -- |
| 18A | 1·4 | -- | ·90 | -- | 1·8 | -- | 1·1 | -- |
| 18B | 1·7 | -- | <·50 | -- | 1·2 | -- | <·50 | -- |
| 19A | -- | -- | <·50 | -- | -- | -- | <·50 | -- |
| 19B | 1·0 | -- | <·50 | -- | -- | -- | <·50 | -- |
| 20A | 1·6 | -- | <·50 | -- | 1·0 | -- | <·50 | -- |
| 20B | 1·1 | -- | <·50 | -- | 1·0 | -- | <·50 | -- |
| 21A | 1·1 | -- | -- | -- | 1·4 | -- | <·50 | -- |
| 21B | 1·3 | -- | -- | -- | -- | -- | <·50 | -- |
| 22A | 1·3 | -- | -- | -- | 1·4 | -- | <·50 | -- |
| 22B | 1·2 | -- | -- | -- | 1·1 | -- | <·50 | -- |

# ASH CELL GROUNDWATER-TBTGS-1982

## Fig. 5 BORON vs TIME



## TABLE XI

ASH CELL GROUNDWATER QUALITY - TBTGS- 1982

TEST : SR (mg/L)

| LOCATION | SAMPLING DATE 820519 | 820520 | 820723 | 820724 | 821015 | 821016 | 821118 | 821119 |
|---|---|---|---|---|---|---|---|---|
| 01A | 2·0 | -- | ·30 | -- | ·29 | -- | ·24 | -- |
| 01B | <1·0 | -- | ·27 | -- | ·18 | -- | ·16 | -- |
| 02A | <1·0 | -- | ·13 | -- | ·13 | -- | ·13 | -- |
| 02B | <1·0 | -- | ·20 | -- | ·23 | -- | ·21 | -- |
| 03A | <1·0 | -- | ·17 | -- | ·16 | -- | ·15 | -- |
| 03B | <1·0 | -- | ·17 | -- | ·18 | -- | ·17 | -- |
| 04A | <1·0 | -- | ·14 | -- | ·13 | -- | ·11 | -- |
| 04B | <1·0 | -- | ·17 | -- | ·18 | -- | ·20 | -- |
| 04C | <1·0 | -- | ·21 | -- | ·19 | -- | ·16 | -- |
| 05A | <1·0 | -- | ·16 | -- | ·14 | -- | ·13 | -- |
| 05B | 1·6 | -- | ·16 | -- | ·070 | -- | ·090 | -- |
| 06A | <1·0 | -- | ·34 | -- | ·26 | -- | ·31 | -- |
| 06B | <1·0 | -- | ·34 | -- | ·25 | -- | ·23 | -- |
| 07A | 1·0 | -- | ·19 | -- | ·13 | -- | ·12 | -- |
| 07B | <1·0 | -- | ·14 | -- | ·14 | -- | ·16 | -- |
| 08A | <1·0 | -- | ·21 | -- | ·14 | -- | ·14 | -- |
| 08B | <1·0 | -- | ·20 | -- | -- | -- | ·16 | -- |
| 09A | <1·0 | -- | ·18 | -- | ·12 | -- | ·11 | -- |
| 09B | <1·0 | -- | ·11 | -- | ·060 | -- | ·050 | -- |
| 10A | <1·0 | -- | ·30 | -- | ·21 | -- | ·19 | -- |
| 10B | <1·0 | -- | ·26 | -- | ·18 | -- | ·19 | -- |
| 11A | <1·0 | -- | ·25 | -- | ·19 | -- | ·20 | -- |
| 11B | <1·0 | -- | ·28 | -- | ·22 | -- | ·23 | -- |
| 12A | <1·0 | -- | ·26 | -- | -- | -- | ·28 | -- |
| 12B | <1·0 | -- | ·52 | -- | -- | -- | ·52 | -- |
| 13A | <1·0 | -- | ·14 | -- | ·11 | -- | ·11 | -- |
| 13B | <1·0 | -- | ·090 | -- | ·060 | -- | ·050 | -- |
| 15A | <1·0 | -- | ·23 | -- | ·15 | -- | ·16 | -- |
| 15B | <1·0 | -- | ·16 | -- | ·090 | -- | ·11 | -- |
| 16A | <1·0 | -- | ·17 | -- | ·15 | -- | ·16 | -- |
| 16B | <1·0 | -- | ·10 | -- | ·090 | -- | ·10 | -- |
| 18A | <1·0 | -- | ·33 | -- | ·29 | -- | ·38 | -- |
| 18B | <1·0 | -- | ·29 | -- | ·21 | -- | ·21 | -- |
| 19A | -- | -- | ·14 | -- | ·13 | -- | ·11 | -- |
| 19B | <1·0 | -- | ·030 | -- | ·040 | -- | ·030 | -- |
| 20A | <1·0 | -- | ·22 | -- | ·15 | -- | ·15 | -- |
| 20B | <1·0 | -- | ·15 | -- | ·13 | -- | ·15 | -- |
| 21A | <1·0 | -- | -- | -- | ·060 | -- | ·070 | -- |
| 21B | <1·0 | -- | -- | -- | ·060 | -- | ·050 | -- |
| 22A | <1·0 | -- | -- | -- | ·21 | -- | ·21 | -- |
| 22B | <1·0 | -- | -- | -- | ·15 | -- | ·15 | -- |

# ASH CELL GROUNDWATER-TBTGS-1982

## Fig. 6 STRONTIUM vs TIME

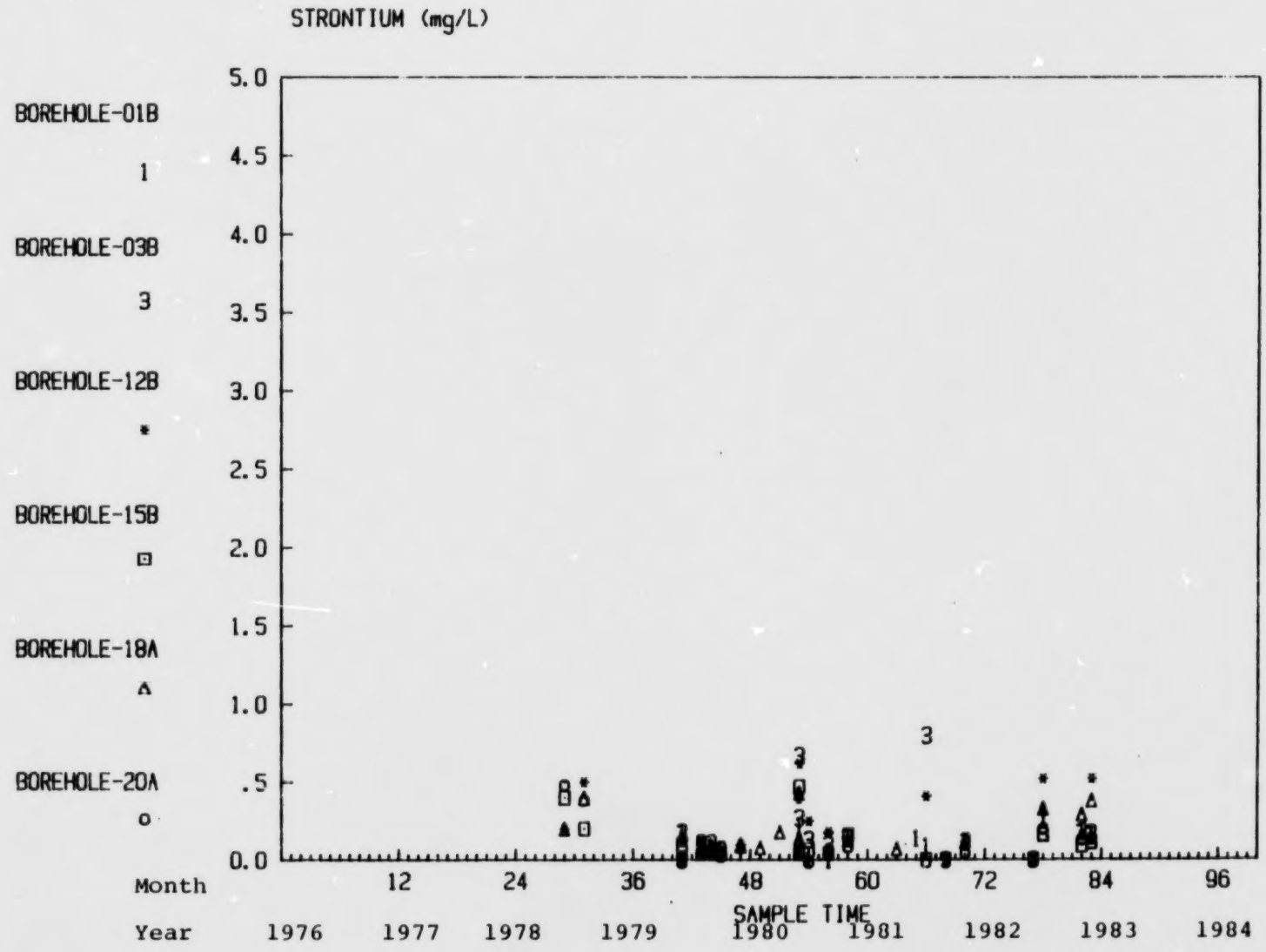


Figure 7

MAJOR ION CHEMISTRY
TBTGS ASH
JULY 23 1982
TYPE - WATER
ASH CELL AREA GROUNDWATER QUALITY

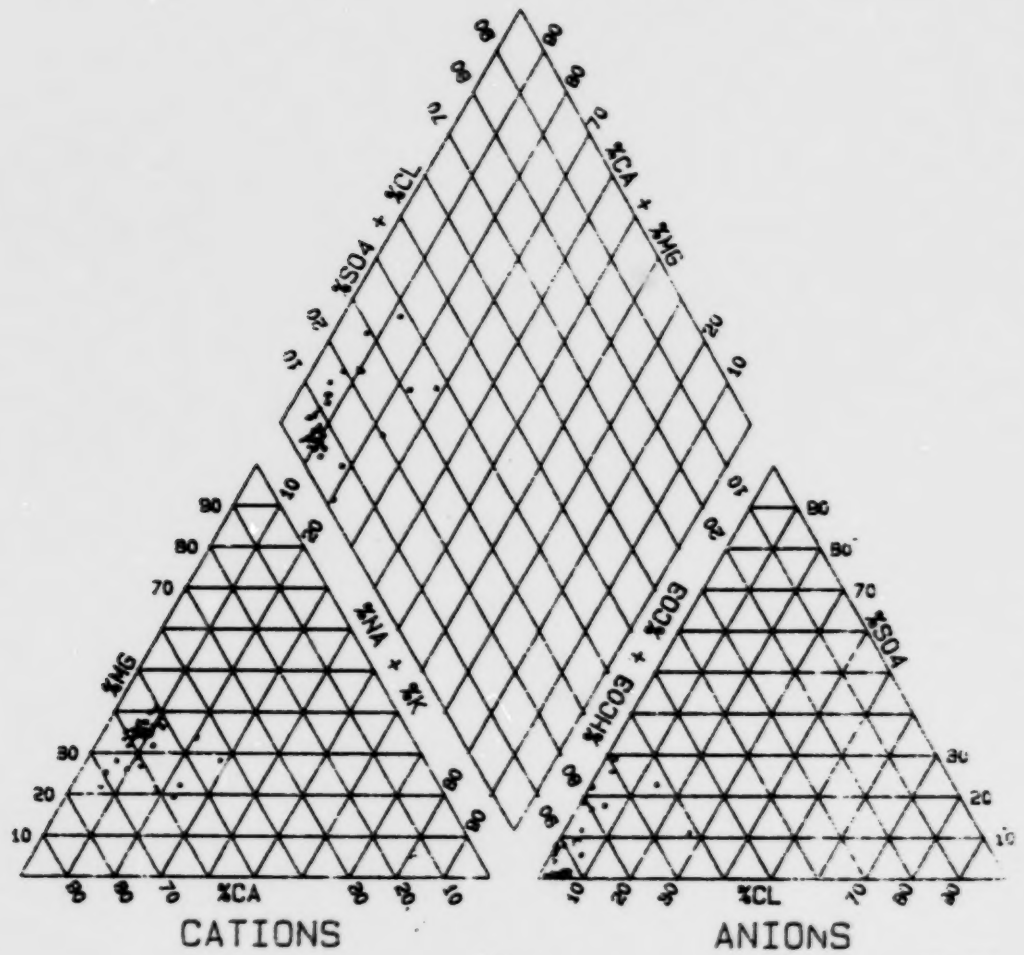
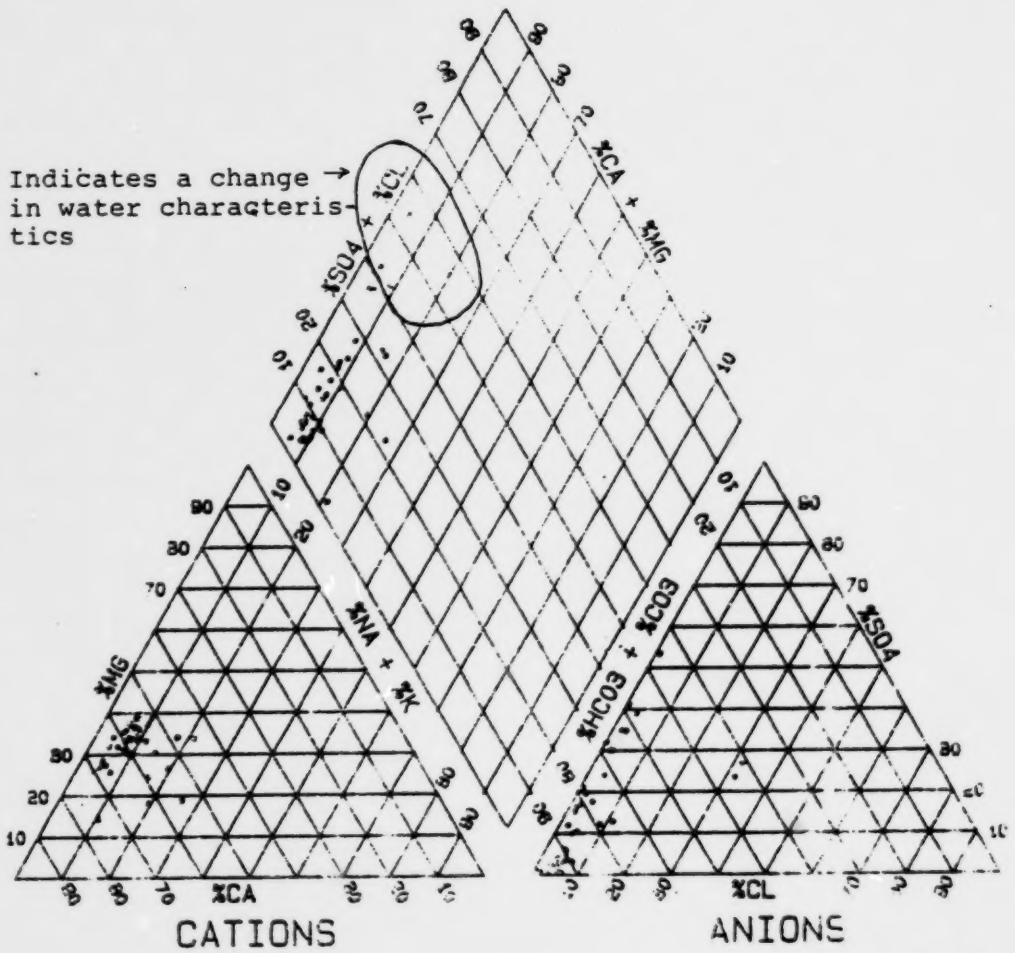


Figure 8

MAJOR ION CHEMISTRY
TBTGS ASH
MAY 19 1982
TYPE - WATER
ASH CELL AREA GROUNDWATER QUALITY




84-67

CONCLUSIONS

Because changes in most piezometer levels have stabilized one annual survey of piezometer levels in 1983 should be adequate.

As observed in the previous years the 1982 data show that changes in groundwater levels are seasonal and influenced by precipitation rather than by changes in lake water levels.

Although the 1982 data are essentially similar to those acquired in the past years, there is some indication of chemical changes, particularly increasing magnesium and boron levels, in groundwaters from the northwest corner of the ash cell. This observation may be confirmed by the 1983 data.

Approved:

for D. Harrison
Manager
Chemical Research Dept

Submitted:

J. Complak
Chemist
Environmental and Inorganic Section

JC:rdm

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# APPENDIX A

## ASH CELL GROUNDWATER MONITORING PROGRAM - 1982 THUNDER BAY TGS EXTENSION

## GROUNDWATER CHARACTERISTICS

(All values are in mg/L except pH and conductivity)
- pH in pH units
- conductivity in mS/m

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 01A

| TEST | 820519 | 820520 * | 820723 | 820724* | 821015 | 821016 * | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | 59.0 | -- | <5.00 | -- |
| ALKHCO3 | 445. | -- | 630. | -- | 679. | -- | 675. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 360. | -- | 670. | -- | 700. | -- | 660. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.00 | -- | <.500 | -- | 3.60 | -- | .600 | -- |
| BA | .0400 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 146. | -- | 139. | -- | 191. | -- | 173. | -- |
| CD | .00030 | -- | .00010 | -- | -- | -- | -- | -- |
| CL | 35.0 | -- | 35.0 | -- | 34.0 | -- | 31.8 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 90.0 | 113. | 118. | 128. | 121. | 170. | 126. | 125. |
| CR | .00100 | -- | <.00050 | -- | -- | -- | -- | -- |
| CU | .0110 | -- | .0800 | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | <.0500 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 1.30 | -- | 2.10 | -- | 1.62 | -- | 1.71 | -- |
| MG | 51.0 | -- | 51.0 | -- | 71.0 | -- | 65.0 | -- |
| MN | 1.00 | -- | 2.70 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 21.0 | -- | 20.0 | -- | 31.0 | -- | 27.0 | -- |
| NI | .0100 | -- | .00600 | -- | -- | -- | -- | -- |
| NO3 | .210 | -- | .430 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 8.00 | 5.90 | 7.40 | 6.50 | 8.10 | 6.70 | 7.10 | 6.40 |
| PO4 | .0300 | -- | .0900 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 15.0 | -- | 19.0 | -- | -- | -- | -- | -- |
| SO4 | 65.0 | -- | 39.0 | -- | 23.0 | -- | 50.5 | -- |
| SR | 2.00 | -- | .300 | -- | .290 | -- | .240 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 01B

| TEST | 820519 | 820520 * | 820723 | 820724 * | 821015 | 821016* | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 261. | -- | 520. | -- | 429. | -- | 438. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 210. | -- | 600. | -- | 430. | -- | 430. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.50 | -- | <.500 | -- | 2.30 | -- | <.500 | -- |
| BA | .140 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 125. | -- | 134. | -- | 142. | -- | 121. | -- |
| CD | .00040 | -- | .00020 | -- | -- | -- | -- | -- |
| CL | 11.0 | -- | 17.0 | -- | 18.0 | -- | 29.8 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 70.0 | 85.0 | 104. | 118. | 100. | 122. | 90.0 | 92.0 |
| CR | .00300 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .0500 | -- | .00800 | -- | -- | -- | -- | -- |
| FE | .110 | -- | .0700 | -- | -- | -- | -- | -- |
| HG | <.00030 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 2.30 | -- | 1.90 | -- | 1.39 | -- | .920 | -- |
| MG | 32.0 | -- | 44.0 | -- | 53.0 | -- | 46.0 | -- |
| MN | <.0500 | -- | 3.70 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 8.50 | -- | 13.0 | -- | 13.0 | -- | 10.0 | -- |
| NI | .0800 | -- | .0120 | -- | -- | -- | -- | -- |
| NO3 | .460 | -- | 2.20 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | .00200 | -- | -- | -- | -- | -- |
| PH | 8.20 | 6.00 | 7.00 | 6.80 | 7.20 | 6.80 | 7.00 | 6.80 |
| PO4 | .0600 | -- | .120 | -- | <.0300 | -- | .0360 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 4.90 | -- | 15.0 | -- | -- | -- | -- | -- |
| SO4 | 163. | -- | 68.0 | -- | 120. | -- | 53.8 | -- |
| SR | <1.00 | -- | .270 | -- | .180 | -- | .160 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

*TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 02A

| TEST | SAMPLING DATE 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 246. | -- | 330. | -- | 383. | -- | 388. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 230. | -- | 400. | -- | 390. | -- | 400. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.00 | -- | <.500 | -- | 1.00 | -- | <.500 | -- |
| BA | <.0100 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 84.0 | -- | 82.0 | -- | 103. | -- | 100. | -- |
| CD | .00010 | -- | .00040 | -- | -- | -- | -- | -- |
| CL | 2.20 | -- | 3.40 | -- | 4.50 | -- | 4.81 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 52.0 | 65.0 | 71.0 | 76.0 | 75.0 | 75.0 | 76.0 | 75.0 |
| CR | .00100 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00500 | -- | .0900 | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | <.0500 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 1.50 | -- | 1.30 | -- | 1.06 | -- | 1.65 | -- |
| MG | 28.0 | -- | 32.0 | -- | 40.0 | -- | 39.0 | -- |
| MN | <.0500 | -- | 1.20 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 11.0 | -- | 11.0 | -- | 12.0 | -- | 11.0 | -- |
| NI | .00600 | -- | .0130 | -- | -- | -- | -- | -- |
| NO3 | .190 | -- | .230 | -- | -- | -- | -- | -- |
| PB | <.0200 | -- | .00300 | -- | -- | -- | -- | -- |
| PH | 8.10 | 6.50 | 7.10 | 7.20 | 7.00 | 7.00 | 7.00 | 6.80 |
| PO4 | .0500 | -- | .0600 | -- | <.0300 | -- | .0420 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 7.20 | -- | 14.0 | -- | -- | -- | -- | -- |
| SO4 | 63.0 | -- | 72.0 | -- | 48.0 | -- | 43.4 | -- |
| SR | <1.00 | -- | .130 | -- | .130 | -- | .130 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 02B

| TEST | SAMPLING DATE 820519 | 820520 * | 820723 | 820724 * | 821015 | 821016* | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 264. | -- | 400. | -- | 279. | -- | 520. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 300. | -- | 390. | -- | 510. | -- | 500. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.00 | -- | <.500 | -- | 2.50 | -- | <.500 | -- |
| BA | .0400 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 100. | -- | 100. | -- | 154. | -- | 146. | -- |
| CD | <.00010 | -- | .00030 | -- | -- | -- | -- | -- |
| CL | 4.50 | -- | 2.70 | -- | 1.90 | -- | 2.35 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 52.0 | 67.0 | 73.0 | 78.0 | 56.0 | 92.0 | 86.0 | 93.0 |
| CR | .00500 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00700 | -- | .0160 | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | .650 | -- | -- | -- | -- | -- |
| HG | .0550 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 2.70 | -- | 2.70 | -- | 2.18 | -- | 1.90 | -- |
| MG | 22.0 | -- | 22.0 | -- | 33.0 | -- | 35.0 | -- |
| MN | <.0500 | -- | 1.40 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 5.30 | -- | 8.00 | -- | 8.70 | -- | 8.50 | -- |
| NI | <.00500 | -- | .0280 | -- | -- | -- | -- | -- |
| NO3 | .670 | -- | .550 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | .00200 | -- | -- | -- | -- | -- |
| PH | 8.00 | 6.70 | 7.30 | 7.00 | 6.90 | 6.90 | 7.60 | 6.70 |
| PO4 | .0500 | -- | .0900 | -- | .0390 | -- | .0510 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 6.90 | -- | 12.0 | -- | -- | -- | -- | -- |
| SO4 | 46.0 | -- | 25.0 | -- | 9.50 | -- | 16.6 | -- |
| SR | <1.00 | -- | .200 | -- | .220 | -- | .210 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <1.00 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 03A

| TEST | SAMPLING DATE 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 326. | -- | 420. | -- | 462. | -- | 439. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 330. | -- | 450. | -- | 450. | -- | 440. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | .800 | -- | <.500 | -- | 1.00 | -- | <.500 | -- |
| BA | .0700 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 99.0 | -- | 87.0 | -- | 114. | -- | 107. | -- |
| CD | .00090 | -- | .00020 | -- | -- | -- | -- | -- |
| CL | 5.80 | -- | 5.90 | -- | 6.20 | -- | 7.60 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 58.0 | 84.0 | 77.0 | 87.0 | 85.0 | 83.0 | 80.0 | 81.0 |
| CR | .00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .0370 | -- | .00900 | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | <.0500 | -- | -- | -- | -- | -- |
| HG | .00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | .800 | -- | 1.30 | -- | 1.21 | -- | 1.40 | -- |
| MG | 36.0 | -- | 31.0 | -- | 40.0 | -- | 40.0 | -- |
| MN | 2.60 | -- | 2.50 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 11.0 | -- | 13.0 | -- | 18.0 | -- | 17.0 | -- |
| NI | <.00500 | -- | <.00500 | -- | -- | -- | -- | -- |
| NO3 | .110 | -- | .0400 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | .0120 | -- | -- | -- | -- | -- |
| PH | 8.00 | 6.70 | 7.00 | 7.00 | 7.40 | 6.70 | 7.60 | 6.60 |
| PO4 | .0400 | -- | .0900 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 7.10 | -- | 18.0 | -- | -- | -- | -- | -- |
| SO4 | 43.0 | -- | 17.0 | -- | 14.0 | -- | 33.3 | -- |
| SR | <1.00 | -- | .170 | -- | .160 | -- | .150 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <1.00 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 03B

| TEST | 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | 60.0 | -- |
| ALKHCO3 | 289. | -- | 430. | -- | 566. | -- | 545. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 160. | -- | 470. | -- | 560. | -- | -- |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | .900 | -- | <.500 | -- | 1.30 | -- | <.500 | -- |
| BA | .0900 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 131. | -- | 108. | -- | 156. | -- | 154. | -- |
| CD | <.00010 | -- | .00050 | -- | -- | -- | -- | -- |
| CL | 7.60 | -- | 6.70 | -- | 6.50 | -- | 9.95 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 75.0 | 91.0 | 81.0 | 95.0 | 105. | 101. | 85.0 | 102. |
| CR | .00600 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .0750 | -- | .0140 | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | 2.67 | -- | -- | -- | -- | -- |
| HG | .00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | .950 | -- | .920 | -- | .810 | -- | 3.70 | -- |
| MG | 31.0 | -- | 28.0 | -- | 42.0 | -- | 45.0 | -- |
| MN | <.0500 | -- | 6.70 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 10.0 | -- | 12.0 | -- | 9.60 | -- | 8.80 | -- |
| NI | .00500 | -- | .0260 | -- | -- | -- | -- | -- |
| NO3 | .480 | -- | .0700 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | .00200 | -- | -- | -- | -- | -- |
| PH | 7.90 | 6.60 | 7.40 | 6.70 | 7.10 | 6.80 | 8.10 | 6.80 |
| PO4 | .0800 | -- | .0930 | -- | <.0300 | -- | .0690 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 7.10 | -- | 13.0 | -- | -- | -- | -- | -- |
| SO4 | 153. | -- | 36.0 | -- | 16.0 | -- | 5.95 | -- |
| SR | <1.00 | -- | .170 | -- | .180 | -- | .170 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <1.00 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 84A

| TEST | 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 318. | -- | 320. | -- | 343. | -- | 336. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | -- | -- | 360. | -- | 340. | -- | 320. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.70 | -- | <.500 | -- | 2.10 | -- | <.500 | -- |
| BA | .0600 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 73.0 | -- | 64.0 | -- | 81.0 | -- | 75.0 | -- |
| CD | <.00010 | -- | .00010 | -- | -- | -- | -- | -- |
| CL | 8.70 | -- | 10.0 | -- | 9.30 | -- | 9.52 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 54.0 | 171. | 60.0 | 76.0 | 66.0 | 65.0 | 58.0 | 60.0 |
| CR | .00400 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00500 | -- | .00700 | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | 3.85 | -- | -- | -- | -- | -- |
| HG | .00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | .750 | -- | 1.30 | -- | 1.09 | -- | 1.23 | -- |
| MG | 26.0 | -- | 22.0 | -- | 27.0 | -- | 27.0 | -- |
| MN | .760 | -- | 1.20 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 14.0 | -- | 16.0 | -- | 19.0 | -- | 16.0 | -- |
| NI | .00500 | -- | .0260 | -- | -- | -- | -- | -- |
| NO3 | .170 | -- | .0300 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | .00200 | -- | -- | -- | -- | -- |
| PH | 8.00 | 6.50 | 7.20 | 6.80 | 7.20 | 6.80 | 7.10 | 6.80 |
| PO4 | .0300 | -- | .0600 | -- | <.0300 | -- | .0510 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 26.0 | -- | 25.0 | -- | -- | -- | -- | -- |
| SO4 | 14.0 | -- | .900 | -- | 1.50 | -- | .890 | -- |
| SR | <1.00 | -- | .140 | -- | .130 | -- | .110 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 04B

| TEST | 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | -- | -- |
| ALKHCO3 | 393. | -- | 460. | -- | 643. | -- | -- | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | -- | -- |
| ALKTOT | -- | -- | -- | 470. | -- | 630. | -- | -- |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.30 | -- | <.500 | -- | 1.20 | -- | -- | -- |
| BA | .0700 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 132. | -- | 113. | -- | 163. | -- | 158. | -- |
| CD | .00040 | -- | .00020 | -- | -- | -- | -- | -- |
| CL | 11.0 | -- | 12.0 | -- | 9.70 | -- | -- | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 94.0 | 103. | 114. | 120. | 116. | 114. | -- | 119. |
| CR | .00300 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .0250 | -- | .0130 | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | <.0500 | -- | -- | -- | -- | -- |
| HG | .00060 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | .900 | -- | 1.80 | -- | 1.62 | -- | 2.60 | -- |
| MG | 33.0 | -- | 23.0 | -- | 37.0 | -- | 43.0 | -- |
| MN | 1.80 | -- | 3.70 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 42.0 | -- | 52.0 | -- | 62.0 | -- | 71.0 | -- |
| NI | .0170 | -- | .0180 | -- | -- | -- | -- | -- |
| NO3 | .800 | -- | .0500 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 8.00 | 6.50 | 6.90 | 7.00 | 7.00 | 6.80 | -- | 6.70 |
| PO4 | .0800 | -- | .0600 | -- | <.030p | -- | -- | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 10.2 | -- | 11.0 | -- | -- | -- | -- | -- |
| SO4 | 168. | -- | 186. | -- | 22.0 | -- | -- | -- |
| SR | <1.00 | -- | .170 | -- | .180 | -- | .200 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 04C

| TEST | SAMPLING DATE 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 457. | -- | 470. | -- | 470. | -- | 470. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | -- | -- | 490. | -- | 490. | -- | 470. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | <.500 | -- | <.500 | -- | 1.60 | -- | <.500 | -- |
| BA | .0800 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 105. | -- | 99.0 | -- | 115. | -- | 110. | -- |
| CD | <.00010 | -- | .00010 | -- | -- | -- | -- | -- |
| CL | 9.20 | -- | 9.90 | -- | 9.60 | -- | 9.48 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 74.0 | 100. | 82.0 | 100. | 85.0 | 92.0 | 81.0 | 91.0 |
| CR | .00500 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | <.00100 | -- | .00100 | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | 20.0 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 1.00 | -- | 1.30 | -- | 1.22 | -- | 1.23 | -- |
| MG | 39.0 | -- | 35.0 | -- | 40.0 | -- | 40.0 | -- |
| MN | 1.30 | -- | 1.90 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 20.0 | -- | 14.0 | -- | 15.0 | -- | 14.0 | -- |
| NI | <.00500 | -- | <.00500 | -- | -- | -- | -- | -- |
| NO3 | .150 | -- | <.0100 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 8.10 | 6.60 | 6.90 | 6.60 | 7.10 | 6.90 | 7.10 | 6.60 |
| PO4 | .0500 | -- | .420 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 23.0 | -- | 21.0 | -- | -- | -- | -- | -- |
| SO4 | 11.0 | -- | 4.30 | -- | 2.90 | -- | 4.20 | -- |
| SR | <1.00 | -- | .210 | -- | .190 | -- | .160 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 05A

| TEST | 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 375. | -- | 370. | -- | 363. | -- | 352. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | -- | -- | 390. | -- | 380. | -- | 360. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.10 | -- | <.500 | -- | 1.20 | -- | <.500 | -- |
| BA | .0600 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 88.0 | -- | 83.0 | -- | 93.0 | -- | 88.0 | -- |
| CD | <.00010 | -- | <.00010 | -- | -- | -- | -- | -- |
| CL | 18.0 | -- | 18.0 | -- | 18.0 | -- | 17.7 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 66.0 | 87.0 | 69.0 | 87.0 | 72.0 | 80.0 | 70.0 | 78.0 |
| CR | .00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | <.00600 | -- | .00100 | -- | -- | -- | -- | -- |
| FE | .0500 | -- | 18.0 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 1.00 | -- | 1.40 | -- | 1.09 | -- | 1.14 | -- |
| MG | 31.0 | -- | 30.0 | -- | 33.0 | -- | 32.0 | -- |
| MN | .120 | -- | 2.50 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 14.0 | -- | 15.0 | -- | 14.0 | -- | 13.0 | -- |
| NI | <.00500 | -- | <.00500 | -- | -- | -- | -- | -- |
| NO3 | .100 | -- | <.0100 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 7.80 | 6.60 | 6.80 | 7.00 | 6.70 | 7.00 | 6.90 | 6.40 |
| PO4 | .100 | -- | .0600 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 23.0 | -- | 20.0 | -- | -- | -- | -- | -- |
| SO4 | 14.0 | -- | 4.30 | -- | 9.00 | -- | 13.5 | -- |
| SR | <1.00 | -- | .160 | -- | .140 | -- | .130 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 05B

| TEST | SAMPLING DATE 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 276. | -- | 270. | -- | 256. | -- | 279. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | -- | -- | -- | -- | 290. | -- | 280. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.50 | -- | <.500 | -- | 1.40 | -- | .500 | -- |
| BA | .0600 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 113. | -- | 64.0 | -- | 65.0 | -- | 73.0 | -- |
| CD | <.00010 | -- | .00010 | -- | -- | -- | -- | -- |
| CL | 11.0 | -- | 8.30 | -- | 8.40 | -- | 5.69 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 74.0 | 83.0 | 56.0 | 79.0 | 52.0 | 68.0 | 58.0 | 65.0 |
| CR | .00500 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .0140 | -- | <.00100 | -- | -- | -- | -- | -- |
| FE | .0500 | -- | 11.0 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 1.10 | -- | .600 | -- | .350 | -- | .670 | -- |
| MG | 28.0 | -- | 22.0 | -- | 26.0 | -- | 26.0 | -- |
| MN | <.0500 | -- | 3.60 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 11.0 | -- | 9.00 | -- | 7.90 | -- | 8.10 | -- |
| NI | .00600 | -- | .0110 | -- | -- | -- | -- | -- |
| NO3 | .200 | -- | .270 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | .00200 | -- | -- | -- | -- | -- |
| PH | 8.00 | 6.70 | 6.70 | 7.00 | 6.30 | 6.80 | 7.10 | 6.50 |
| PO4 | .0900 | -- | .0600 | -- | .0690 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 8.50 | -- | 16.0 | -- | -- | -- | -- | -- |
| SO4 | 148. | -- | 25.0 | -- | 25.0 | -- | 30.4 | -- |
| SR | 1.60 | -- | .160 | -- | .0700 | -- | .0900 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 06A

| TEST | SAMPLING DATE 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 577. | -- | 600. | -- | 626. | -- | 278. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | -- | -- | 690. | -- | 690. | -- | 580. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.20 | -- | <.500 | -- | 1.60 | -- | <.500 | -- |
| BA | .0300 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 131. | -- | 117. | -- | 148. | -- | 143. | -- |
| CD | <.00010 | -- | .00010 | -- | -- | -- | -- | -- |
| CL | 16.0 | -- | 13.0 | -- | 15.0 | -- | 17.0 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 92.0 | 127. | 103. | 125. | 108. | 117. | 106. | 110. |
| CR | .00100 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .0250 | -- | <.00100 | -- | -- | -- | -- | -- |
| FE | 18.0 | -- | 35.0 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 1.10 | -- | 1.30 | -- | 1.09 | -- | 1.55 | -- |
| MG | 51.0 | -- | 45.0 | -- | 56.0 | -- | 53.0 | -- |
| MN | <.0500 | -- | 1.50 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 22.0 | -- | 21.0 | -- | 30.0 | -- | 26.0 | -- |
| NI | .00600 | -- | <.00500 | -- | -- | -- | -- | -- |
| NO3 | .120 | -- | <.0100 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 7.60 | 6.40 | 6.70 | 7.00 | 6.80 | 6.90 | 6.80 | 6.50 |
| PO4 | .0500 | -- | .0300 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 20.7 | -- | 19.0 | -- | -- | -- | -- | -- |
| SO4 | 1.10 | -- | 1.60 | -- | .100 | -- | 18.0 | -- |
| SR | <1.00 | -- | .340 | -- | .260 | -- | .310 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 06B

| TEST | SAMPLING DATE 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 447. | -- | 740. | -- | 778. | -- | 597. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 290. | -- | 780. | -- | 900. | -- | 560. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | <.500 | -- | <.500 | -- | 1.80 | -- | <.500 | -- |
| BA | .0700 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 162. | -- | 133. | -- | 170. | -- | 141. | -- |
| CD | <.00010 | -- | .00010 | -- | -- | -- | -- | -- |
| CL | 4.30 | -- | 5.80 | -- | 7.70 | -- | 50.9 | -- |
| CO | <.00700 | -- | .00900 | -- | -- | -- | -- | -- |
| COND | 116. | 140. | 125. | 147. | 128. | 145. | 116. | 123. |
| CR | .00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00600 | -- | .00200 | -- | -- | -- | -- | -- |
| FE | .0600 | -- | 29.0 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 2.05 | -- | 1.60 | -- | .570 | -- | .610 | -- |
| MG | 64.0 | -- | 65.0 | -- | 79.0 | -- | 74.0 | -- |
| MN | 4.70 | -- | 6.50 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 29.0 | -- | 25.0 | -- | 18.0 | -- | 14.0 | -- |
| NI | .0120 | -- | .0240 | -- | -- | -- | -- | -- |
| NO3 | .0200 | -- | <.0100 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 7.90 | 6.20 | 7.00 | 6.80 | 6.70 | 6.90 | 6.90 | 6.60 |
| PO4 | .0900 | -- | .0600 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 10.0 | -- | 11.0 | -- | -- | -- | -- | -- |
| SO4 | 304. | -- | 45.0 | -- | 6.50 | -- | 42.7 | -- |
| SR | <1.00 | -- | .340 | -- | .250 | -- | .230 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 07A

| TEST | SAMPLING DATE 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 318. | -- | 340. | -- | 339. | -- | 352. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 290. | -- | 340. | -- | 380. | -- | 290. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | .900 | -- | <.500 | -- | 1.30 | -- | <.500 | -- |
| BA | .110 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 78.0 | -- | 69.0 | -- | 86.0 | -- | 84.0 | -- |
| CD | <.00010 | -- | .00010 | -- | -- | -- | -- | -- |
| CL | 11.0 | -- | 15.0 | -- | 12.0 | -- | 15.6 | -- |
| CO | .00300 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 60.0 | 86.0 | 63.0 | 85.0 | 66.0 | 77.0 | 68.0 | 75.0 |
| CR | .00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00200 | -- | .00400 | -- | -- | -- | -- | -- |
| FE | 2.53 | -- | .140 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | .490 | -- | .800 | -- | .500 | -- | .680 | -- |
| MG | 31.0 | -- | 26.0 | -- | 32.0 | -- | 35.0 | -- |
| MN | 2.10 | -- | 1.80 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 13.0 | -- | 15.0 | -- | 14.0 | -- | 14.0 | -- |
| NI | <.00500 | -- | .0150 | -- | -- | -- | -- | -- |
| NO3 | .0100 | -- | <.0100 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 7.70 | 6.50 | 6.60 | 7.10 | 6.70 | 6.90 | 7.20 | 6.70 |
| PO4 | .0800 | -- | .0600 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 20.4 | -- | 22.0 | -- | -- | -- | -- | -- |
| SO4 | 35.0 | -- | 6.40 | -- | 14.0 | -- | 23.6 | -- |
| SR | 1.00 | -- | .190 | -- | .130 | -- | .120 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 07B

| TEST | SAMPLING DATE 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 302. | -- | 330. | -- | 447. | -- | 558. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 250. | -- | 280. | -- | 510. | -- | 560. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.10 | -- | <.500 | -- | 1.70 | -- | <.500 | -- |
| BA | .0200 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 68.0 | -- | 65.0 | -- | 131. | -- | 148. | -- |
| CD | <.00010 | -- | <.00010 | -- | -- | -- | -- | -- |
| CL | 9.20 | -- | 10.0 | -- | 7.00 | -- | 11.3 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 53.0 | 77.0 | 59.0 | 82.0 | 91.0 | 110. | 105. | 115. |
| CR | .00100 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00200 | -- | .00100 | -- | -- | -- | -- | -- |
| FE | 2.12 | -- | 9.20 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | .210 | -- | .300 | -- | .180 | -- | .400 | -- |
| MG | 27.0 | -- | 27.0 | -- | 47.0 | -- | 51.0 | -- |
| MN | 2.10 | -- | 2.90 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 9.80 | -- | 11.0 | -- | 14.0 | -- | 14.0 | -- |
| NI | .00600 | -- | .0240 | -- | -- | -- | -- | -- |
| NO3 | .0400 | -- | .0200 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 7.50 | 6.20 | 6.80 | 7.20 | 6.70 | 6.90 | 6.80 | 6.60 |
| PO4 | .0300 | -- | .0600 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 20.0 | -- | 20.0 | -- | -- | -- | -- | -- |
| SO4 | 11.0 | -- | 3.20 | -- | 84.0 | -- | 52.5 | -- |
| SR | <1.00 | -- | .140 | -- | .140 | -- | .160 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 08A

| TEST | 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| | | | SAMPLING DATE | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 390. | -- | 390. | -- | 420. | -- | 463. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 310. | -- | 430. | -- | 510. | -- | 450. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.30 | -- | <.500 | -- | 1.00 | -- | <.500 | -- |
| BA | .0500 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 85.0 | -- | 77.0 | -- | 100. | -- | 100. | -- |
| CD | .00040 | -- | .00010 | -- | -- | -- | -- | -- |
| CL | 5.00 | -- | 6.20 | -- | 4.00 | -- | 4.23 | -- |
| CO | .00400 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 64.0 | 100. | 69.0 | 102. | 73.0 | 95.0 | 78.0 | 97.0 |
| CR | .00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00200 | -- | .0100 | -- | -- | -- | -- | -- |
| FE | 16.0 | -- | 53.0 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | .800 | -- | 1.10 | -- | .860 | -- | 1.28 | -- |
| MG | 34.0 | -- | 31.0 | -- | 40.0 | -- | 42.0 | -- |
| MN | 2.90 | -- | 3.20 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 9.70 | -- | 10.0 | -- | 8.70 | -- | 12.0 | -- |
| NI | .0160 | -- | .0140 | -- | -- | -- | -- | -- |
| NO3 | .100 | -- | <.0100 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 7.60 | 6.60 | 6.60 | 7.20 | 6.50 | 6.50 | 6.90 | 6.70 |
| PO4 | .0300 | -- | .0600 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 16.5 | -- | 18.0 | -- | -- | -- | -- | -- |
| SO4 | 2.60 | -- | .800 | -- | 6.40 | -- | 8.26 | -- |
| SR | <1.00 | -- | .210 | -- | .140 | -- | .140 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 08B

| TEST | SAMPLING DATE 820519 | 820520* | 820723 | 820724* | 821015 | 821016 | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | -- | -- | <5.00 | -- |
| ALKHCO3 | 289. | -- | 430. | -- | -- | -- | 646. | -- |
| ALKOH | -- | -- | -- | -- | -- | -- | <5.00 | -- |
| ALKTOT | -- | 300. | -- | 410. | -- | -- | -- | 640. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | .200 | -- | <.500 | -- | -- | -- | <.500 | -- |
| BA | .110 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 61.0 | -- | 124. | -- | -- | -- | 142. | -- |
| CD | .00020 | -- | <.00010 | -- | -- | -- | -- | -- |
| CL | 14.0 | -- | 1.30 | -- | -- | -- | 11.7 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 52.0 | 120. | 100. | 113. | -- | -- | 114. | 110. |
| CR | .00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00700 | -- | .0120 | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | <.0500 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | .800 | -- | .900 | -- | -- | -- | 1.50 | -- |
| MG | 26.0 | -- | 46.0 | -- | -- | -- | 59.0 | -- |
| MN | 1.30 | -- | 1.96 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 13.0 | -- | 15.0 | -- | -- | -- | 38.0 | -- |
| NI | .00600 | -- | .0300 | -- | -- | -- | -- | -- |
| NO3 | .400 | -- | .0300 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 8.10 | 6.60 | 7.00 | 6.90 | -- | -- | 7.60 | 6.80 |
| PO4 | .0500 | -- | .300 | -- | -- | -- | .0480 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 21.0 | -- | 9.80 | -- | -- | -- | -- | -- |
| SO4 | 1.40 | -- | 35.0 | -- | -- | -- | 28.9 | -- |
| SR | <1.00 | -- | .200 | -- | -- | -- | .160 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 09A

| TEST | SAMPLING DATE 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALRCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALPHCO3 | 250. | -- | 280. | -- | 286. | -- | 285. | -- |
| ALTOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | -- | -- | 240. | -- | 280. | -- | 310. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.10 | -- | <.500 | -- | 1.30 | -- | <.500 | -- |
| BA | <.0100 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 143. | -- | 56.0 | -- | 69.0 | -- | 65.0 | -- |
| CD | <.00010 | -- | .00010 | -- | -- | -- | -- | -- |
| CL | 5.00 | -- | 15.0 | -- | 15.0 | -- | 17.7 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 86.0 | 73.0 | 53.0 | 88.0 | 53.0 | 61.0 | 55.0 | 61.0 |
| CR | .00400 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00700 | -- | .0110 | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | .0600 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | .830 | -- | 1.00 | -- | .950 | -- | 1.07 | -- |
| MG | 48.0 | -- | 23.0 | -- | 28.0 | -- | 27.0 | -- |
| MN | .100 | -- | 1.20 | -- | -- | -- | -- | -- |
| MO | 1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 11.0 | -- | 12.0 | -- | 11.0 | -- | 11.0 | -- |
| NI | <.00500 | -- | .0160 | -- | -- | -- | -- | -- |
| NO3 | 2.00 | -- | <.0100 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | .0130 | -- | -- | -- | -- | -- |
| PH | 8.20 | 6.50 | 7.10 | 7.00 | 6.60 | 6.90 | 7.00 | 6.20 |
| PO4 | .0300 | -- | .210 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 8.10 | -- | 21.0 | -- | -- | -- | -- | -- |
| SO4 | 282. | -- | .700 | -- | .710 | -- | 2.40 | -- |
| SR | <1.00 | -- | .100 | -- | .120 | -- | .110 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | .400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 09B

| TEST | SAMPLING DATE 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 248. | -- | 220. | -- | 137. | -- | 225. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 250. | -- | 180. | -- | 220. | -- | -- |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.10 | -- | <.500 | -- | 1.20 | -- | <.500 | -- |
| BA | .100 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 61.0 | -- | 50.0 | -- | 57.0 | -- | 54.0 | -- |
| CD | .00010 | -- | <.00010 | -- | -- | -- | -- | -- |
| CL | 11.0 | -- | 11.0 | -- | 12.0 | -- | 11.5 | -- |
| CO | .00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 46.0 | 60.0 | 44.0 | 67.0 | 31.0 | 54.0 | 44.0 | 54.0 |
| CR | .00100 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .0110 | -- | .00200 | -- | -- | -- | -- | -- |
| FE | .100 | -- | 7.80 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | .920 | -- | 1.10 | -- | 1.07 | -- | .880 | -- |
| MG | 19.0 | -- | 18.0 | -- | 19.0 | -- | 19.0 | -- |
| MN | 1.10 | -- | 1.20 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 6.80 | -- | 8.00 | -- | 8.40 | -- | 7.30 | -- |
| NI | .0190 | -- | .0180 | -- | -- | -- | -- | -- |
| NO3 | .0900 | -- | <.0100 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 8.10 | 6.50 | 6.70 | 6.80 | 6.10 | 6.20 | 7.50 | 6.40 |
| PO4 | .0300 | -- | .360 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 19.2 | -- | 20.0 | -- | -- | -- | -- | -- |
| SO4 | 7.50 | -- | 3.40 | -- | .580 | -- | .640 | -- |
| SR | <1.00 | -- | .110 | -- | .0600 | -- | .0500 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TL | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| U | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | .0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained from fresh samples the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 10A

| TEST | 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821116 | 821119* |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 357. | -- | 360. | -- | 371. | -- | 371. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 300. | -- | 310. | -- | 380. | -- | 390. |
| AS | <.00190 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | .900 | -- | <.500 | -- | 1.80 | -- | <.500 | -- |
| BA | .0300 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 78.0 | -- | 75.0 | -- | 85.0 | -- | 81.0 | -- |
| CD | <.00010 | -- | <.00010 | -- | -- | -- | -- | -- |
| CL | 9.00 | -- | 10.0 | -- | 11.0 | -- | 11.5 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 60.0 | 75.0 | 64.0 | 75.0 | 66.0 | 71.0 | 66.0 | 70.0 |
| CR | .00100 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00600 | -- | .00300 | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | <.0500 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 1.00 | -- | 1.60 | -- | 1.14 | -- | 1.02 | -- |
| MG | 30.0 | -- | 29.0 | -- | 35.0 | -- | 35.0 | -- |
| MN | 1.80 | -- | 1.10 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 13.0 | -- | 16.0 | -- | 16.0 | -- | 15.0 | -- |
| NI | .00500 | -- | <.00500 | -- | -- | -- | -- | -- |
| NO3 | .0900 | -- | .110 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 8.20 | 6.50 | 6.80 | 7.10 | 7.10 | 6.70 | 6.80 | 6.50 |
| PO4 | .160 | -- | .210 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 15.6 | -- | 16.0 | -- | -- | -- | -- | -- |
| SO4 | 6.40 | -- | 1.90 | -- | .520 | -- | .550 | -- |
| SR | <1.00 | -- | .300 | -- | .210 | -- | .190 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 10B

| TEST | 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 463. | -- | 480. | -- | 469. | -- | 495. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 500. | -- | 460. | -- | 460. | -- | 400. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | .900 | -- | <.500 | -- | 2.90 | -- | <.500 | -- |
| BA | .0300 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 83.0 | -- | 76.0 | -- | 87.0 | -- | 92.0 | -- |
| CD | <.00010 | -- | <.00010 | -- | -- | -- | -- | -- |
| CL | 5.20 | -- | 6.20 | -- | 5.90 | -- | 10.5 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 72.0 | 94.0 | 80.0 | 96.0 | 80.0 | 88.0 | 84.0 | 88.0 |
| CR | .00100 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .0100 | -- | .00200 | -- | -- | -- | -- | -- |
| FE | .0500 | -- | .130 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 1.20 | -- | 1.30 | -- | 1.15 | -- | 1.75 | -- |
| MG | 38.0 | -- | 34.0 | -- | 40.0 | -- | 45.0 | -- |
| MN | 2.70 | -- | 2.70 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 45.0 | -- | 39.0 | -- | 46.0 | -- | 41.0 | -- |
| NI | .00600 | -- | <.00500 | -- | -- | -- | -- | -- |
| NO3 | .790 | -- | <.0100 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | .00200 | -- | -- | -- | -- | -- |
| PH | 6.80 | 6.80 | 7.20 | 7.00 | 7.20 | 6.80 | 7.00 | 6.60 |
| PO4 | .0700 | -- | .100 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 18.5 | -- | 17.0 | -- | -- | -- | -- | -- |
| SO4 | 3.50 | -- | 1.40 | -- | .750 | -- | 1.32 | -- |
| SR | <1.00 | -- | .260 | -- | .120 | -- | .190 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY (BTGS

LOCATION : 11A

| TEST | 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 412. | -- | 420. | -- | 443. | -- | 439. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 310. | -- | 460. | -- | 430. | -- | 440. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.20 | -- | <.500 | -- | 1.20 | -- | <.500 | -- |
| BA | .0600 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 90.0 | -- | 78.0 | -- | 96.0 | -- | 92.0 | -- |
| CD | <.00010 | -- | <.00010 | -- | -- | -- | -- | -- |
| CL | 18.0 | -- | 19.0 | -- | 17.0 | -- | 16.3 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 66.0 | 93.0 | 75.0 | 93.0 | 78.0 | 85.0 | 78.0 | 86.0 |
| CR | .00500 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00500 | -- | .00200 | -- | -- | -- | -- | -- |
| FE | 3.70 | -- | 6.69 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | .850 | -- | 1.10 | -- | .830 | -- | .850 | -- |
| MG | 41.0 | -- | 36.0 | -- | 44.0 | -- | 42.0 | -- |
| MN | 2.40 | -- | 2.90 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 20.0 | -- | 19.0 | -- | 21.0 | -- | 22.0 | -- |
| NI | .00500 | -- | <.0180 | -- | -- | -- | -- | -- |
| NO3 | .230 | -- | <.0100 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 8.20 | 6.80 | 7.10 | 6.80 | 6.70 | 6.80 | 6.80 | 6.40 |
| PO4 | .0600 | -- | .150 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 20.5 | -- | 18.0 | -- | -- | -- | -- | -- |
| SO4 | 1.20 | -- | 1.10 | -- | .750 | -- | .670 | -- |
| SR | <1.00 | -- | .250 | -- | .190 | -- | .200 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 11B

| TEST | SAMPLING DATE 820519 | 820520* | 820723 | 820724* | 821015 | 821016* | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 471. | -- | 510. | -- | 576. | -- | 602. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 400. | -- | 560. | -- | 600. | -- | 670. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.10 | -- | <.500 | -- | <.500 | -- | <.500 | -- |
| BA | .0700 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 104. | -- | 100. | -- | 126. | -- | 126. | -- |
| CD | .00010 | -- | <.00010 | -- | -- | -- | -- | -- |
| CL | 13.0 | -- | 12.0 | -- | 12.5 | -- | 12.6 | -- |
| CO | .00400 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 76.0 | 103. | 88.0 | 107. | 96.0 | 150. | 100. | 107. |
| CR | .00400 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00700 | -- | .00103 | -- | -- | -- | -- | -- |
| FE | 1.52 | -- | 12.0 | -- | -- | -- | -- | -- |
| HG | .00030 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 1.60 | -- | 1.60 | -- | 1.17 | -- | 1.07 | -- |
| MG | 45.0 | -- | 46.0 | -- | 60.0 | -- | 62.0 | -- |
| MN | 1.70 | -- | 1.50 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 15.0 | -- | 17.0 | -- | 15.0 | -- | 16.0 | -- |
| NI | .0160 | -- | .0350 | -- | -- | -- | -- | -- |
| NO3 | .230 | -- | <.0100 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 7.90 | 6.70 | 6.90 | 7.00 | 6.60 | 6.70 | 7.40 | 6.60 |
| PO4 | .0900 | -- | .450 | -- | .0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 14.7 | -- | 16.0 | -- | -- | -- | -- | -- |
| SO4 | 10.0 | -- | 4.40 | -- | 2.20 | -- | 1.95 | -- |
| SR | <1.00 | -- | .200 | -- | .220 | -- | .230 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 12A

| TEST | 820519 | 820520* | 820723 | 820724* | 821015 | 821016 | 821118 | 821119* |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | -- | -- | 35.0 | -- |
| ALKHCO3 | 542. | -- | 510. | -- | -- | -- | 510. | -- |
| ALKOH | -- | -- | -- | -- | -- | -- | <5.00 | -- |
| ALKTOT | -- | 127. | -- | 490. | -- | -- | -- | -- |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.40 | -- | <.500 | -- | -- | -- | <.500 | -- |
| BA | .0600 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 123. | -- | 101. | -- | -- | -- | 121. | -- |
| CD | .00010 | -- | <.00010 | -- | -- | -- | -- | -- |
| CL | 19.0 | -- | 18.0 | -- | -- | -- | 13.3 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 99.0 | 119. | 90.0 | 107. | -- | -- | 91.0 | 100. |
| CR | .00500 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .0160 | -- | .00200 | -- | -- | -- | -- | -- |
| FE | 12.0 | -- | 18.0 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 1.60 | -- | 2.60 | -- | -- | -- | 3.20 | -- |
| MG | 55.0 | -- | 43.0 | -- | -- | -- | 48.0 | -- |
| MN | 2.20 | -- | 2.10 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 19.0 | -- | 27.0 | -- | -- | -- | 32.0 | -- |
| NI | .00600 | -- | .0180 | -- | -- | -- | -- | -- |
| NO3 | .200 | -- | <.0100 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 7.60 | 6.50 | 7.20 | 6.80 | -- | -- | 8.00 | 6.60 |
| PO4 | .0300 | -- | .0900 | -- | -- | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 16.4 | -- | 17.0 | -- | -- | -- | -- | -- |
| SO4 | 13.0 | -- | 8.50 | -- | -- | -- | 2.37 | -- |
| SR | <1.00 | -- | .260 | -- | -- | -- | .280 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

OCATION : 12B

| TEST | SAMPLING DATE 820519 | 820520 * | 820723 | 820724 * | 821015 | 821016 | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | -- | -- | <5.00 | -- |
| ALKHCO3 | 503. | -- | 530. | -- | -- | -- | 644. | -- |
| ALKOH | -- | -- | -- | -- | -- | -- | <5.00 | -- |
| ALKTOT | -- | 460. | -- | 510. | -- | -- | -- | 670. |
| AS | <.00100 | -- | .00200 | -- | -- | -- | -- | -- |
| B | 1.60 | -- | <.500 | -- | -- | -- | <.500 | -- |
| BA | .120 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 134. | -- | 121. | -- | -- | -- | 161. | -- |
| CD | <.00010 | -- | <.00010 | -- | -- | -- | -- | -- |
| CL | 30.0 | -- | 21.0 | -- | -- | -- | 13.5 | -- |
| CO | .00700 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 88.0 | 112. | 93.0 | 111. | -- | -- | 103. | 112. |
| CR | .00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00200 | -- | .00200 | -- | -- | -- | -- | -- |
| FE | 32.0 | -- | 26.0 | -- | -- | -- | -- | -- |
| HG | .00110 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 2.30 | -- | 3.20 | -- | -- | -- | 3.30 | -- |
| MG | 40.0 | -- | 35.0 | -- | -- | -- | 49.0 | -- |
| MN | 1.90 | -- | 2.20 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 25.0 | -- | 23.0 | -- | -- | -- | 24.0 | -- |
| NI | .0160 | -- | .0360 | -- | -- | -- | -- | -- |
| NO3 | .0600 | -- | .130 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 7.70 | 6.60 | 7.40 | 6.80 | -- | -- | 7.30 | 6.70 |
| PO4 | .0900 | -- | .450 | -- | -- | -- | .0600 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 12.6 | -- | 16.0 | -- | -- | -- | -- | -- |
| SO4 | 16.0 | -- | 1.30 | -- | -- | -- | .530 | -- |
| SR | <1.00 | -- | .520 | -- | -- | -- | .520 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | .00300 | -- | .00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

OCATION : 13A

| TEST | 820519 | 820520 * | 820723 | 820724 * | 821015 | 821016 * | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 279. | -- | 280. | -- | 295. | -- | 290. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 260. | -- | 270. | -- | 310. | -- | 290. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.20 | -- | <.500 | -- | 1.20 | -- | <.500 | -- |
| BA | .100 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 70.0 | -- | 64.0 | -- | 71.0 | -- | 71.0 | -- |
| CD | .00010 | -- | .00030 | -- | -- | -- | -- | -- |
| CL | 10.0 | -- | 10.0 | -- | 9.80 | -- | 10.3 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 48.0 | 80.0 | 52.0 | 79.0 | 54.0 | 70.0 | 56.0 | 72.0 |
| CR | .00100 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00500 | -- | <.00100 | -- | -- | -- | -- | -- |
| FE | 3.09 | -- | 8.40 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | .920 | -- | 1.20 | -- | 1.03 | -- | .990 | -- |
| MG | 26.0 | -- | 24.0 | -- | 28.0 | -- | 29.0 | -- |
| MN | 1.70 | -- | 1.90 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 8.10 | -- | 12.0 | -- | 11.0 | -- | 8.60 | -- |
| NI | .00800 | -- | .00800 | -- | -- | -- | -- | -- |
| NO3 | .0600 | -- | <.0100 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | .00600 | -- | -- | -- | -- | -- |
| PH | 8.00 | 6.30 | 6.70 | 6.80 | 6.50 | 6.70 | 6.60 | 6.50 |
| PO4 | .0300 | -- | .0300 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 14.2 | -- | 21.0 | -- | -- | -- | -- | -- |
| SO4 | 5.53 | -- | 1.60 | -- | 8.10 | -- | 11.9 | -- |
| SR | <1.00 | -- | .140 | -- | .110 | -- | .110 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

CATION : 13B

| TEST | 820519 | 820520 * | 820723 | 820724 * | 821015 | 821016 * | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 238. | -- | 200. | -- | 233. | -- | 239. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | -- | -- | -- | -- | 250. | -- | -- |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.20 | -- | <.500 | -- | 1.60 | -- | <.500 | -- |
| BA | <.0100 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 68.0 | -- | 51.0 | -- | 57.0 | -- | 52.0 | -- |
| CD | .00010 | -- | .00050 | -- | -- | -- | -- | -- |
| CL | 9.70 | -- | 11.0 | -- | 9.80 | -- | 10.6 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 48.0 | 72.0 | 47.0 | 71.0 | 46.0 | 60.0 | 48.0 | 57.0 |
| CR | .00400 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00500 | -- | .00400 | -- | -- | -- | -- | -- |
| FE | 3.80 | -- | .860 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | .700 | -- | 1.00 | -- | .730 | -- | .790 | -- |
| MG | 24.0 | -- | 22.0 | -- | 26.0 | -- | 27.0 | -- |
| MN | 1.60 | -- | 2.10 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 11.0 | -- | 12.0 | -- | 9.60 | -- | 9.20 | -- |
| NI | .0250 | -- | .0350 | -- | -- | -- | -- | -- |
| NO3 | .160 | -- | .0200 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 7.80 | 6.10 | 7.30 | 6.70 | 6.40 | 6.60 | 7.60 | 6.40 |
| PO4 | .0300 | -- | .0500 | -- | .0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 12.3 | -- | 19.0 | -- | -- | -- | -- | -- |
| SO4 | 26.0 | -- | 44.0 | -- | 13.0 | -- | 11.0 | -- |
| SR | <1.00 | -- | .0900 | -- | .0600 | -- | .0500 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | .00300 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 15A

| TEST | 820519 | 820520 * | 820723 | 820724 * | 821015 | 821016 * | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 346. | -- | 340. | -- | 347. | -- | 328. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 250. | -- | 360. | -- | 340. | -- | 350. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.50 | -- | <.500 | -- | 1.40 | -- | <.500 | -- |
| BA | .100 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 80.0 | -- | 79.0 | -- | 83.0 | -- | 77.0 | -- |
| CD | <.00010 | -- | <.00010 | -- | -- | -- | -- | -- |
| CL | 14.0 | -- | 15.0 | -- | 14.0 | -- | 13.9 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 60.0 | 89.0 | 63.0 | 86.0 | 62.0 | 76.0 | 61.0 | 75.0 |
| CR | .00600 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00600 | -- | <.00100 | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | 26.0 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 1.60 | -- | 2.00 | -- | 1.90 | -- | 1.82 | -- |
| MG | 34.0 | -- | 30.0 | -- | 32.0 | -- | 31.9 | -- |
| MN | 1.20 | -- | 1.70 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 10.0 | -- | 12.0 | -- | 11.0 | -- | 11.0 | -- |
| NI | .0100 | -- | <.00500 | -- | -- | -- | -- | -- |
| NO3 | .260 | -- | <.0100 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 7.20 | 6.40 | 6.70 | 6.80 | 6.50 | 6.50 | 6.70 | 6.30 |
| PO4 | .0300 | -- | <.0300 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 19.5 | -- | 20.0 | -- | -- | -- | -- | -- |
| SO4 | 3.00 | -- | 1.20 | -- | .320 | -- | 2.76 | -- |
| SR | <1.00 | -- | .230 | -- | .150 | -- | .160 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 153

| TEST | 820519 | 820520 * | 820723 | 820724 * | 821015 | 821016 * | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 423. | -- | 450. | -- | 427. | -- | 446. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 310. | -- | 490. | -- | 460. | -- | -- |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.30 | -- | <.500 | -- | 1.30 | -- | <.500 | -- |
| BA | .0600 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 122. | -- | 102. | -- | 105. | -- | 109. | -- |
| CD | .00020 | -- | .00030 | -- | -- | -- | -- | -- |
| CL | 14.0 | -- | 17.0 | -- | 16.0 | -- | 18.0 | -- |
| CO | .00500 | -- | .00900 | -- | -- | -- | -- | -- |
| COND | 76.0 | 93.0 | 81.0 | 96.0 | 75.0 | 88.0 | 80.0 | 93.0 |
| CR | .00300 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00600 | -- | .00600 | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | 13.0 | -- | -- | -- | -- | -- |
| HG | .00190 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 1.70 | -- | 1.90 | -- | 1.80 | -- | 1.92 | -- |
| MG | 37.0 | -- | 36.0 | -- | 40.0 | -- | 43.0 | -- |
| MN | 3.00 | -- | 5.40 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 8.80 | -- | 9.00 | -- | 9.90 | -- | 9.60 | -- |
| NI | .0130 | -- | .0300 | -- | -- | -- | -- | -- |
| NO3 | .440 | -- | .0900 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 7.80 | 6.60 | 6.80 | 6.60 | 6.40 | 6.50 | 7.50 | 6.40 |
| PO4 | .0700 | -- | .0900 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00100 | -- | -- | -- | -- | -- |
| SI | 14.1 | -- | 14.0 | -- | -- | -- | -- | -- |
| SO4 | 28.0 | -- | 6.80 | -- | 4.00 | -- | 8.58 | -- |
| SR | <1.00 | -- | .160 | -- | .0900 | -- | .110 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | .500 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 16A

| TEST | SAMPLING DATE 820519 | 820520 * | 820723 | 820724 * | 821015 | 821016 * | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 311. | -- | 290. | -- | 176. | -- | 160. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 297. | -- | 360. | -- | 220. | -- | 170. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.20 | -- | <.500 | -- | 1.80 | -- | <.500 | -- |
| BA | <.0100 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 76.0 | -- | 75.0 | -- | 86.0 | -- | 93.0 | -- |
| CD | <.00010 | -- | <.00010 | -- | -- | -- | -- | -- |
| CL | 12.0 | -- | 11.0 | -- | 12.0 | -- | 12.9 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 54.0 | 89.0 | 58.0 | 85.0 | 66.0 | 83.0 | 72.0 | 90.0 |
| CR | .00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00300 | -- | <.00100 | -- | -- | -- | -- | -- |
| FE | 7.30 | -- | 32.0 | -- | -- | -- | -- | -- |
| HG | .00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 1.23 | -- | 1.50 | -- | 1.16 | -- | 1.33 | -- |
| MG | 28.0 | -- | 30.0 | -- | 32.0 | -- | 37.0 | -- |
| MN | 2.40 | -- | 2.60 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 8.40 | -- | 10.0 | -- | 9.80 | -- | 11.0 | -- |
| NI | <.00500 | -- | <.00500 | -- | -- | -- | -- | -- |
| NO3 | .170 | -- | <.0100 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 7.60 | 6.60 | 6.60 | 6.80 | 6.30 | 6.40 | 6.40 | 6.40 |
| PO4 | .0600 | -- | .0300 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 13.8 | -- | 22.0 | -- | -- | -- | -- | -- |
| SO4 | 19.0 | -- | 30.0 | -- | 103. | -- | 212. | -- |
| SR | <1.00 | -- | .170 | -- | .150 | -- | .160 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | .700 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | .0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 16B

| TEST | 820519 | 820520 * | 820723 | 820724 * | 821015 | 821016 * | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 318. | -- | 320. | -- | 261. | -- | 189. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 350. | -- | 390. | -- | 260. | -- | 200. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.00 | -- | <.500 | -- | 1.60 | -- | <.500 | -- |
| BA | .0300 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 121. | -- | 103. | -- | 114. | -- | 125. | -- |
| CD | <.00010 | -- | .00030 | -- | -- | -- | -- | -- |
| CL | 6.60 | -- | 10.0 | -- | 9.80 | -- | 11.5 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 62.0 | 78.0 | 62.0 | 77.0 | 69.0 | 75.0 | 80.0 | 89.0 |
| CR | .00300 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00800 | -- | .00200 | -- | -- | -- | -- | -- |
| FE | .550 | -- | 18.0 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | .640 | -- | .900 | -- | .670 | -- | .760 | -- |
| MG | 14.0 | -- | 19.0 | -- | 23.0 | -- | 33.0 | -- |
| MN | .210 | -- | 1.10 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 20.0 | -- | 10.0 | -- | 8.50 | -- | 9.10 | -- |
| NI | .00800 | -- | .0200 | -- | -- | -- | -- | -- |
| NO3 | .570 | -- | .0600 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | .00200 | -- | -- | -- | -- | -- |
| PH | 8.40 | 6.50 | 7.00 | 6.30 | 7.00 | 6.60 | 6.90 | 6.50 |
| PO4 | .210 | -- | .0300 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 9.30 | -- | 15.0 | -- | -- | -- | -- | -- |
| SO4 | 64.0 | -- | 33.0 | -- | 118. | -- | 241. | -- |
| SR | <1.00 | -- | .100 | -- | .0900 | -- | .100 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 18A

| TEST | 820519 | 820520 * | 820723 | 820724 * | 821015 | 821016 * | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| | | | SAMPLING DATE | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | 33.0 | -- | <5.00 | -- |
| ALKHCO3 | 240. | -- | 360. | -- | 275. | -- | 340. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 260. | -- | -- | -- | 320. | -- | 370. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.40 | -- | .900 | -- | 1.80 | -- | 1.10 | -- |
| BA | .0300 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 80.0 | -- | 94.0 | -- | 95.0 | -- | 100. | -- |
| CD | <.00010 | -- | .00010 | -- | -- | -- | -- | -- |
| CL | 5.20 | -- | 2.90 | -- | 12.0 | -- | 61.0 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 52.0 | 69.0 | 65.0 | 73.0 | 65.0 | 73.0 | 78.0 | 75.0 |
| CR | .0130 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .0160 | -- | .0110 | -- | -- | -- | -- | -- |
| FE | .160 | -- | 1.92 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 1.70 | -- | 1.80 | -- | 1.31 | -- | 1.36 | -- |
| MG | 14.0 | -- | 20.0 | -- | 26.0 | -- | 29.0 | -- |
| MN | .0500 | -- | <.200 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 28.0 | -- | 32.0 | -- | 25.0 | -- | 20.0 | -- |
| NI | <.00500 | -- | .0130 | -- | -- | -- | -- | -- |
| NO3 | .630 | -- | 1.40 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | .00600 | -- | -- | -- | -- | -- |
| PH | 8.30 | 7.00 | 7.90 | 6.90 | 7.90 | 6.50 | 7.40 | 6.60 |
| PO4 | .110 | -- | .0200 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 8.20 | -- | 14.0 | -- | -- | -- | -- | -- |
| SO4 | 59.0 | -- | 56.0 | -- | 63.0 | -- | 9.72 | -- |
| SR | <1.00 | -- | .330 | -- | .290 | -- | .350 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | .0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 168

| TEST | 820519 | 820520 * | 820723 | 820724 * | 821015 | 821016 * | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | 43.0 | -- | 55.0 | -- |
| ALKHCO3 | 212. | -- | 240. | -- | 322. | -- | 293. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 240. | -- | 360. | -- | 360. | -- | -- |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.70 | -- | <.500 | -- | 1.20 | -- | <.500 | -- |
| BA | <.0100 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 73.0 | -- | 76.0 | -- | 100. | -- | 100. | -- |
| CD | <.00010 | -- | .00020 | -- | -- | -- | -- | -- |
| CL | 3.30 | -- | 2.40 | -- | 9.50 | -- | 10.0 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 44.0 | 47.0 | 53.0 | 62.0 | 64.0 | 67.0 | 66.0 | 62.0 |
| CR | .00300 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .0220 | -- | .00500 | -- | -- | -- | -- | -- |
| FE | .120 | -- | .730 | -- | -- | -- | -- | -- |
| HG | .00200 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 1.90 | -- | 1.70 | -- | 1.01 | -- | .928 | -- |
| MG | 17.0 | -- | 19.0 | -- | 30.0 | -- | 29.0 | -- |
| MN | <.0400 | -- | <.200 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 8.60 | -- | 13.0 | -- | 9.70 | -- | 8.90 | -- |
| NI | <.00500 | -- | .0110 | -- | -- | -- | -- | -- |
| NO3 | 1.00 | -- | 1.60 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | .0140 | -- | -- | -- | -- | -- |
| PH | 7.00 | 6.90 | 7.70 | 6.80 | 8.20 | 6.90 | 8.40 | 6.70 |
| PO4 | .0400 | -- | .0600 | -- | .0390 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 6.90 | -- | 6.80 | -- | -- | -- | -- | -- |
| SO4 | 40.0 | -- | 66.0 | -- | 28.0 | -- | 37.4 | -- |
| SR | <1.00 | -- | .290 | -- | .210 | -- | .210 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 19A

| TEST | SAMPLING DATE 820519 | 820520 | 820721 | 820724 * | 821015 | 821016 * | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| AG | -- | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | -- | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | -- | -- | <5.00 | -- |
| ALKHCO3 | -- | -- | 170. | -- | -- | -- | 210. | -- |
| ALKOH | -- | -- | -- | -- | -- | -- | <5.00 | -- |
| ALKTOT | -- | -- | -- | -- | -- | 230. | -- | 220. |
| AS | -- | -- | <.00200 | -- | -- | -- | -- | -- |
| B | -- | -- | <.500 | -- | -- | -- | <.500 | -- |
| BA | -- | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | -- | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | -- | -- | 60.0 | -- | 67.0 | -- | 73.0 | -- |
| CD | -- | -- | .00010 | -- | -- | -- | -- | -- |
| CL | -- | -- | 53.0 | -- | -- | -- | 36.6 | -- |
| CO | -- | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | -- | -- | 52.0 | 56.0 | -- | 61.0 | 54.0 | 53.0 |
| CR | -- | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | -- | -- | .00700 | -- | -- | -- | -- | -- |
| FE | -- | -- | <.0500 | -- | -- | -- | -- | -- |
| HG | -- | -- | -- | -- | -- | -- | -- | -- |
| K | -- | -- | 1.90 | -- | 1.59 | -- | 1.19 | -- |
| MG | -- | -- | 18.0 | -- | 21.0 | -- | 21.0 | -- |
| MN | -- | -- | <.200 | -- | -- | -- | -- | -- |
| MO | -- | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | -- | -- | 15.0 | -- | 13.0 | -- | 8.80 | -- |
| NI | -- | -- | <.00500 | -- | -- | -- | -- | -- |
| NO3 | -- | -- | 2.50 | -- | -- | -- | -- | -- |
| PB | -- | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | -- | -- | 7.80 | 7.10 | -- | 7.80 | 7.40 | 6.40 |
| PO4 | -- | -- | <.0300 | -- | -- | -- | <.0300 | -- |
| SE | -- | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | -- | -- | 10.0 | -- | -- | -- | -- | -- |
| SO4 | -- | -- | 29.0 | -- | -- | -- | 28.7 | -- |
| SR | -- | -- | .140 | -- | .130 | -- | .110 | -- |
| TH | -- | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | -- | -- | <.500 | -- | -- | -- | -- | -- |
| V | -- | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | -- | -- | <.0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 1PB

| TEST | 820519 | 820526 * | 820723 | 820724 * | 821015 | 821016 * | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE | | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | -- | -- | <5.00 | -- |
| ALKHCO3 | 58.0 | -- | 93.0 | -- | -- | -- | 91.0 | -- |
| ALKOH | -- | -- | -- | -- | -- | -- | <5.00 | -- |
| ALKTOT | -- | 500. | -- | -- | -- | 110. | -- | -- |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.00 | -- | <.500 | -- | -- | -- | <.500 | -- |
| BA | <.0100 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 28.0 | -- | 28.0 | -- | 35.0 | -- | 25.0 | -- |
| CD | .00040 | -- | .00020 | -- | -- | -- | -- | -- |
| CL | 32.0 | -- | 16.0 | -- | -- | -- | 12.6 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 28.0 | 35.0 | 32.0 | 35.0 | -- | 35.0 | 24.0 | 21.0 |
| CR | .00500 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .00500 | -- | .00300 | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | <.0500 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | .240 | -- | .700 | -- | .360 | -- | .490 | -- |
| MG | 12.0 | -- | 11.0 | -- | 12.0 | -- | 11.0 | -- |
| MN | <.0430 | -- | <.200 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 12.0 | -- | 21.0 | -- | 14.0 | -- | 7.30 | -- |
| NI | <.00500 | -- | .0140 | -- | -- | -- | -- | -- |
| NO3 | 3.80 | -- | 2.40 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 7.40 | 7.00 | 7.30 | 7.30 | -- | 7.00 | 7.00 | 6.60 |
| PO4 | .0500 | -- | <.0100 | -- | -- | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 7.50 | -- | 11.0 | -- | -- | -- | -- | -- |
| SO4 | 36.0 | -- | 34.0 | -- | -- | -- | 14.2 | -- |
| SR | <1.00 | -- | .0500 | -- | .0400 | -- | .0300 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <1400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | .0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 20A

| TEST | 820519 | 820520 * | 820723 | 820724 * | 821015 | 821016 * | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 345. | -- | 460. | -- | 451. | -- | 459. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 400. | -- | 460. | -- | 460. | -- | 470. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.60 | -- | <.500 | -- | 1.00 | -- | <.500 | -- |
| BA | .0600 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 102. | -- | 122. | -- | 134. | -- | 141. | -- |
| CD | <.00010 | -- | .00010 | -- | -- | -- | -- | -- |
| CL | 15.0 | -- | 15.0 | -- | 13.0 | -- | 15.0 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 72.0 | 81.0 | 96.0 | 104. | 92.0 | 93.0 | 96.0 | 97.0 |
| CR | .00500 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .0200 | -- | .00800 | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | .0700 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 3.40 | -- | 3.20 | -- | 3.00 | -- | 2.40 | -- |
| MG | 21.0 | -- | 30.0 | -- | 39.0 | -- | 48.0 | -- |
| MN | <.0400 | -- | <.200 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 55.0 | -- | 58.0 | -- | 33.0 | -- | 26.0 | -- |
| NI | <.00500 | -- | .0200 | -- | -- | -- | -- | -- |
| NO3 | 2.30 | -- | 3.00 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | .00300 | -- | -- | -- | -- | -- |
| PH | 6.30 | 6.90 | 7.80 | 7.00 | 7.20 | 6.70 | 7.60 | 6.60 |
| PO4 | .0900 | -- | .0600 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 3.70 | -- | 7.10 | -- | -- | -- | -- | -- |
| SO4 | 75.0 | -- | 92.0 | -- | 93.0 | -- | 120. | -- |
| SR | <1.00 | -- | .220 | -- | .150 | -- | .150 | -- |
| TH | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | <.400 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | .0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 20B

| TEST | SAMPLING DATE 820519 | 820520 * | 820723 | 820724 * | 821015 | 821016 * | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| AL | <.400 | -- | <.200 | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 278. | -- | 310. | -- | 387. | -- | 401. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 300. | -- | 290. | -- | 400. | -- | 420. |
| AS | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| B | 1.10 | -- | <.500 | -- | 1.00 | -- | <.500 | -- |
| BA | .0300 | -- | <.0500 | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| CA | 94.0 | -- | 108. | -- | 122. | -- | 128. | -- |
| CD | .00020 | -- | <.00010 | -- | -- | -- | -- | -- |
| CL | 11.0 | -- | 10.0 | -- | 10.0 | -- | 15.5 | -- |
| CO | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| COND | 61.0 | 69.0 | 77.0 | 83.0 | 82.0 | 84.0 | 88.0 | 82.0 |
| CR | .00300 | -- | <.00500 | -- | -- | -- | -- | -- |
| CU | .0200 | -- | .00200 | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | .340 | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | <.00020 | -- | -- | -- | -- | -- |
| K | 1.10 | -- | 1.60 | -- | 1.74 | -- | 1.70 | -- |
| MG | 29.0 | -- | 34.0 | -- | 39.0 | -- | 43.0 | -- |
| MN | .0400 | -- | .900 | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | <1.00 | -- | -- | -- | -- | -- |
| NA | 14.0 | -- | 14.0 | -- | 13.0 | -- | 12.0 | -- |
| NI | <.00500 | -- | .0200 | -- | -- | -- | -- | -- |
| NO3 | .600 | -- | <.0100 | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | <.00200 | -- | -- | -- | -- | -- |
| PH | 8.40 | 6.80 | 7.10 | 6.60 | 6.80 | 6.70 | 7.10 | 6.70 |
| PO4 | .0300 | -- | .0300 | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | <.00200 | -- | -- | -- | -- | -- |
| SI | 5.10 | -- | 11.2 | -- | -- | -- | -- | -- |
| SO4 | 89.0 | -- | 103. | -- | 95.0 | -- | 107. | -- |
| SR | <1.00 | -- | .150 | -- | .130 | -- | .150 | -- |
| TN | <.00050 | -- | <.00050 | -- | -- | -- | -- | -- |
| TI | .500 | -- | <.500 | -- | -- | -- | -- | -- |
| V | <.00200 | -- | <.00500 | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | .0200 | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 21A

| TEST | SAMPLING DATE 820519 | 820520 * | 820723 | 820724 | 821015 | 821016 * | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| AG | <.00020 | -- | -- | -- | -- | -- | -- | -- |
| AL | <.400 | -- | -- | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 186. | -- | -- | -- | 167. | -- | 196. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 200. | -- | -- | -- | 180. | -- | 230. |
| AS | <.00100 | -- | -- | -- | -- | -- | -- | -- |
| B | 1.10 | -- | -- | -- | 1.40 | -- | <.500 | -- |
| BA | .0500 | -- | -- | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | -- | -- | -- | -- | -- | -- |
| CA | 55.0 | -- | -- | -- | 50.0 | -- | 55.0 | -- |
| CD | .00010 | -- | -- | -- | -- | -- | -- | -- |
| CL | 20.0 | -- | -- | -- | 23.0 | -- | 22.8 | -- |
| CO | <.00200 | -- | -- | -- | -- | -- | -- | -- |
| COND | 42.0 | 47.0 | -- | -- | 41.0 | 41.0 | 44.0 | 43.0 |
| CR | .00300 | -- | -- | -- | -- | -- | -- | -- |
| CU | .0120 | -- | -- | -- | -- | -- | -- | -- |
| FE | .250 | -- | -- | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | -- | -- | -- | -- | -- | -- |
| K | 1.20 | -- | -- | -- | 1.15 | -- | 1.43 | -- |
| MG | 21.0 | -- | -- | -- | 18.0 | -- | 22.0 | -- |
| MN | .350 | -- | -- | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | -- | -- | -- | -- | -- | -- |
| NA | 9.20 | -- | -- | -- | 9.20 | -- | 8.40 | -- |
| NI | .0120 | -- | -- | -- | -- | -- | -- | -- |
| NO3 | .850 | -- | -- | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | -- | -- | -- | -- | -- | -- |
| PH | 7.90 | 6.80 | -- | -- | 6.80 | 7.00 | 7.60 | 6.50 |
| PO4 | .0300 | -- | -- | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | -- | -- | -- | -- | -- | -- |
| SI | 11.4 | -- | -- | -- | -- | -- | -- | -- |
| SO4 | 30.0 | -- | -- | -- | 19.0 | -- | 17.0 | -- |
| SR | <1.00 | -- | -- | -- | .0600 | -- | .0700 | -- |
| TH | <.00050 | -- | -- | -- | -- | -- | -- | -- |
| TI | <.400 | -- | -- | -- | -- | -- | -- | -- |
| V | <.00200 | -- | -- | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | -- | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 218

| TEST | 820519 | 820520 * | 820723 | 820724 | 821015 | 821016 * | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | -- | -- | -- | -- | -- | -- |
| AL | <.400 | -- | -- | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | -- | -- | <5.00 | -- |
| ALKHCO3 | 113. | -- | -- | -- | -- | -- | 98.0 | -- |
| ALKOH | -- | -- | -- | -- | -- | -- | <5.00 | -- |
| ALKTOT | -- | 150. | -- | -- | -- | 100. | -- | -- |
| AS | <.00100 | -- | -- | -- | -- | -- | -- | -- |
| B | 1.30 | -- | -- | -- | -- | -- | <.500 | -- |
| BA | .100 | -- | -- | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | -- | -- | -- | -- | -- | -- |
| CA | 57.0 | -- | -- | -- | 50.0 | -- | 36.0 | -- |
| CD | .00040 | -- | -- | -- | -- | -- | -- | -- |
| CL | 58.0 | -- | -- | -- | -- | -- | 38.0 | -- |
| CO | <.00200 | -- | -- | -- | -- | -- | -- | -- |
| COND | 50.0 | 54.0 | -- | -- | -- | 45.0 | 32.0 | 33.0 |
| CR | .00200 | -- | -- | -- | -- | -- | -- | -- |
| CU | .0120 | -- | -- | -- | -- | -- | -- | -- |
| FE | .0500 | -- | -- | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | -- | -- | -- | -- | -- | -- |
| K | 1.90 | -- | -- | -- | 2.10 | -- | 1.97 | -- |
| MG | 17.0 | -- | -- | -- | 13.0 | -- | 11.0 | -- |
| MN | <.0400 | -- | -- | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | -- | -- | -- | -- | -- | -- |
| NA | 23.0 | -- | -- | -- | 20.0 | -- | 19.0 | -- |
| NI | <.00500 | -- | -- | -- | -- | -- | -- | -- |
| NO3 | 9.60 | -- | -- | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | -- | -- | -- | -- | -- | -- |
| PH | 7.90 | 6.90 | -- | -- | -- | 6.60 | 6.70 | 6.20 |
| PO4 | .0300 | -- | -- | -- | -- | -- | .0960 | -- |
| SE | <.00100 | -- | -- | -- | -- | -- | -- | -- |
| SI | 7.00 | -- | -- | -- | -- | -- | -- | -- |
| SO4 | 57.0 | -- | -- | -- | -- | -- | 7.79 | -- |
| SR | <1.00 | -- | -- | -- | .0600 | -- | .0500 | -- |
| TH | <.00050 | -- | -- | -- | -- | -- | -- | -- |
| TI | <.400 | -- | -- | -- | -- | -- | -- | -- |
| V | <.00200 | -- | -- | -- | -- | -- | -- | -- |
| ZN | <.0200 | -- | -- | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 22A

| TEST | 820519 | 820520 * | 820723 | 820724 | 821015 | 821016 * | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | -- | -- | -- | -- | -- | -- |
| AL | <.400 | -- | -- | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 507. | -- | -- | -- | 521. | -- | 517. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 340. | -- | -- | -- | 510. | -- | 520. |
| AS | <.00100 | -- | -- | -- | -- | -- | -- | -- |
| B | 1.30 | -- | -- | -- | 1.40 | -- | <.500 | -- |
| BA | .0600 | -- | -- | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | -- | -- | -- | -- | -- | -- |
| CA | 121. | -- | -- | -- | 127. | -- | 123. | -- |
| CD | <.00010 | -- | -- | -- | -- | -- | -- | -- |
| CL | 21.0 | -- | -- | -- | 19.0 | -- | 20.3 | -- |
| CO | <.00200 | -- | -- | -- | -- | -- | -- | -- |
| COND | 86.0 | 105. | -- | -- | 92.0 | 99.0 | 94.0 | 95.0 |
| CR | .00100 | -- | -- | -- | -- | -- | -- | -- |
| CU | .00500 | -- | -- | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | -- | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | -- | -- | -- | -- | -- | -- |
| K | 1.20 | -- | -- | -- | 1.58 | -- | 1.76 | -- |
| MG | 44.0 | -- | -- | -- | 45.0 | -- | 44.0 | -- |
| MN | 1.80 | -- | -- | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | -- | -- | -- | -- | -- | -- |
| NA | 29.0 | -- | -- | -- | 33.0 | -- | 35.0 | -- |
| NI | <.00500 | -- | -- | -- | -- | -- | -- | -- |
| NO3 | .0600 | -- | -- | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | -- | -- | -- | -- | -- | -- |
| PH | 7.60 | 6.80 | -- | -- | 7.30 | 7.00 | 7.70 | 6.80 |
| PO4 | .0300 | -- | -- | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | -- | -- | -- | -- | -- | -- |
| SI | 14.1 | -- | -- | -- | -- | -- | -- | -- |
| SO4 | 25.0 | -- | -- | -- | 27.0 | -- | 31.8 | -- |
| SR | <1.00 | -- | -- | -- | .210 | -- | .210 | -- |
| TH | <.00050 | -- | -- | -- | -- | -- | -- | -- |
| TI | <.400 | -- | -- | -- | -- | -- | -- | -- |
| V | <.00200 | -- | -- | -- | -- | -- | -- | -- |
| ZN | .0200 | -- | -- | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

ASH CELL GROUNDWATER QUALITY TBTGS

LOCATION : 22B

| TEST | 820519 | 820520 * | 820723 | 820724 | 821015 | 821016 * | 821118 | 821119 * |
|---|---|---|---|---|---|---|---|---|
| | SAMPLING DATE | | | | | | | |
| AG | <.00020 | -- | -- | -- | -- | -- | -- | -- |
| AL | <.400 | -- | -- | -- | -- | -- | -- | -- |
| ALKCO3 | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKHCO3 | 416. | -- | -- | -- | 491. | -- | 489. | -- |
| ALKOH | -- | -- | -- | -- | <5.00 | -- | <5.00 | -- |
| ALKTOT | -- | 420. | -- | -- | -- | 500. | -- | 500. |
| AS | <.00100 | -- | -- | -- | -- | -- | -- | -- |
| B | 1.20 | -- | -- | -- | 1.10 | -- | <.500 | -- |
| BA | .0600 | -- | -- | -- | -- | -- | -- | -- |
| BE | <.00020 | -- | -- | -- | -- | -- | -- | -- |
| CA | 131. | -- | -- | -- | 134. | -- | 140. | -- |
| CD | .00020 | -- | -- | -- | -- | -- | -- | -- |
| CL | 2.00 | -- | -- | -- | 1.57 | -- | 3.73 | -- |
| CO | <.00200 | -- | -- | -- | -- | -- | -- | -- |
| COND | 95.0 | 105. | -- | -- | 97.0 | 98.0 | 102. | 95.0 |
| CR | .00100 | -- | -- | -- | -- | -- | -- | -- |
| CU | .0150 | -- | -- | -- | -- | -- | -- | -- |
| FE | <.0500 | -- | -- | -- | -- | -- | -- | -- |
| HG | <.00020 | -- | -- | -- | -- | -- | -- | -- |
| K | 1.00 | -- | -- | -- | 1.11 | -- | 1.31 | -- |
| MG | 44.0 | -- | -- | -- | 39.0 | -- | 49.0 | -- |
| MN | 1.00 | -- | -- | -- | -- | -- | -- | -- |
| MO | <1.00 | -- | -- | -- | -- | -- | -- | -- |
| NA | 41.0 | -- | -- | -- | 55.0 | -- | 39.0 | -- |
| NI | .0280 | -- | -- | -- | -- | -- | -- | -- |
| NO3 | .0800 | -- | -- | -- | -- | -- | -- | -- |
| PB | <.00200 | -- | -- | -- | -- | -- | -- | -- |
| PH | 8.10 | 6.60 | -- | -- | 7.40 | 6.80 | 7.00 | 6.80 |
| PO4 | .0300 | -- | -- | -- | <.0300 | -- | <.0300 | -- |
| SE | <.00100 | -- | -- | -- | -- | -- | -- | -- |
| SI | 10.5 | -- | -- | -- | -- | -- | -- | -- |
| SO4 | 190. | -- | -- | -- | 112. | -- | 120. | -- |
| SR | <1.00 | -- | -- | -- | .150 | -- | .150 | -- |
| TH | <.00050 | -- | -- | -- | -- | -- | -- | -- |
| TI | <.400 | -- | -- | -- | -- | -- | -- | -- |
| V | <.00200 | -- | -- | -- | -- | -- | -- | -- |
| ZN | .0500 | -- | -- | -- | -- | -- | -- | -- |

* TBTGS data obtained on fresh samples taken the day before that shown.

# APPENDIX B

## ASH CELL GROUNDWATER MONITORING PROGRAM - 1982 THUNDER BAY TGS EXTENSION

## ION BALANCES AND PIPER DIAGRAMS

MAJOR ION CHEMISTRY

TBTGS ASH
MAY 19 1982
TYPE - WATER

ASH CELL AREA GROUNDWATER QUALITY- TBTGS

| LOCATION | CATIONS | | | | | | | | | | | | CATION TOTAL | ANION TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CA | | | MG | | | NA | | | K | | | | |
| | MG/L | EPM | %EPM | MG/L | EPM | %EPM | MG/L | EPM | %EPM | MG/L | EPM | %EPM | | |
| 01A | 146 | 7.28 | 59 | 51 | 4.20 | 34 | 21 | .91 | 7 | 1 | .03 | 0 | 12.43 | 11.24 |
| 01B | 125 | 6.23 | 67 | 32 | 2.63 | 28 | 9 | .37 | 4 | 2 | .06 | 1 | 9.30 | 9.02 |
| 02A | 84 | 4.19 | 60 | 28 | 2.30 | 33 | 11 | .48 | 7 | 2 | .04 | 1 | 7.01 | 6.29* |
| 02B | 100 | 4.99 | 70 | 22 | 1.81 | 26 | 5 | .23 | 3 | 3 | .07 | 1 | 7.10 | 6.36* |
| 03A | 99 | 4.94 | 59 | 36 | 2.96 | 35 | 11 | .48 | 6 | 1 | .02 | 0 | 8.40 | 7.58 |
| 03B | 131 | 6.53 | 68 | 31 | 2.55 | 27 | 10 | .43 | 5 | 1 | .02 | 0 | 9.54 | 9.18 |
| 04A | 73 | 3.64 | 57 | 26 | 2.14 | 33 | 14 | .61 | 9 | 1 | .02 | 0 | 6.41 | 6.89 |
| 04B | 132 | 6.58 | 59 | 33 | 2.72 | 24 | 42 | 1.83 | 16 | 1 | .02 | 0 | 11.15 | 11.66 |
| 04C | 105 | 5.24 | 56 | 39 | 3.21 | 34 | 20 | .87 | 9 | 1 | .03 | 0 | 9.34 | 9.63 |
| 05A | 88 | 4.39 | 58 | 31 | 2.55 | 34 | 14 | .61 | 8 | 1 | .03 | 0 | 7.57 | 8.30 |
| 05B | 113 | 5.64 | 67 | 28 | 2.30 | 27 | 11 | .48 | 6 | 1 | .03 | 0 | 8.45 | 8.91 |
| 06A | 131 | 6.53 | 56 | 51 | 4.20 | 36 | 22 | .96 | 8 | 1 | .03 | 0 | 11.72 | 12.01 |
| 06B | 162 | 8.08 | 55 | 64 | 5.27 | 36 | 29 | 1.26 | 9 | 2 | .05 | 0 | 14.66 | 15.39 |
| 07A | 78 | 3.89 | 55 | 31 | 2.55 | 36 | 13 | .57 | 8 | 0 | .01 | 0 | 7.02 | 7.40 |
| 07B | 68 | 3.39 | 56 | 27 | 2.22 | 37 | 10 | .43 | 7 | 0 | .01 | 0 | 6.05 | 6.53 |
| 08A | 85 | 4.24 | 57 | 34 | 2.80 | 37 | 10 | .42 | 6 | 1 | .02 | 0 | 7.48 | 7.99 |
| 08B | 61 | 3.04 | 53 | 26 | 2.14 | 37 | 13 | .57 | 10 | 1 | .02 | 0 | 5.77 | 6.20 |
| 09A | 143 | 7.13 | 62 | 48 | 3.95 | 34 | 11 | .48 | 4 | 1 | .02 | 0 | 11.58 | 11.01 |
| 09B | 61 | 3.04 | 62 | 19 | 1.56 | 32 | 7 | .30 | 6 | 1 | .02 | 0 | 4.93 | 5.42 |
| 10A | 78 | 3.89 | 56 | 30 | 2.47 | 36 | 13 | .57 | 8 | 1 | .03 | 0 | 6.95 | 7.52 |
| 10B | 83 | 4.14 | 45 | 38 | 3.13 | 34 | 45 | 1.96 | 21 | 2 | .05 | 0 | 9.27 | 9.48 |
| 11A | 90 | 4.49 | 51 | 41 | 3.37 | 39 | 20 | .87 | 10 | 1 | .02 | 0 | 8.75 | 8.77 |
| 11B | 104 | 5.19 | 54 | 45 | 3.70 | 39 | 15 | .65 | 7 | 2 | .05 | 0 | 9.59 | 9.99 |
| 12A | 123 | 6.13 | 53 | 55 | 4.53 | 39 | 18 | .78 | 7 | 2 | .05 | 0 | 11.49 | 11.64 |
| 12B | 134 | 6.68 | 60 | 40 | 3.29 | 30 | 25 | 1.09 | 10 | 2 | .06 | 1 | 11.12 | 11.24 |
| 13A | 70 | 3.49 | 58 | 26 | 2.14 | 36 | 8 | .35 | 6 | 1 | .02 | 0 | 6.01 | 5.97 |
| 13B | 68 | 3.39 | 58 | 24 | 1.98 | 34 | 11 | .48 | 8 | 1 | .02 | 0 | 5.86 | 5.61 |
| 15A | 80 | 3.99 | 55 | 34 | 2.80 | 39 | 10 | .43 | 6 | 2 | .04 | 1 | 7.26 | 7.37 |
| 15B | 122 | 6.08 | 64 | 37 | 3.05 | 32 | 9 | .38 | 4 | 2 | .04 | 0 | 9.56 | 9.43 |
| 16A | 76 | 3.79 | 58 | 28 | 2.30 | 35 | 8 | .37 | 6 | 1 | .03 | 0 | 6.49 | 6.95 |
| 16B | 121 | 6.03 | 75 | 14 | 1.15 | 14 | 20 | .87 | 11 | 1 | .02 | 0 | 8.07 | 7.88 |
| 18A | 80 | 3.99 | 62 | 14 | 1.15 | 18 | 28 | 1.22 | 19 | 2 | .04 | 1 | 6.40 | 6.33 |
| 18B | 73 | 3.64 | 67 | 17 | 1.40 | 26 | 9 | .37 | 7 | 2 | .05 | 1 | 5.46 | 5.16 |
| 19B | 28 | 1.40 | 48 | 12 | .99 | 34 | 12 | .52 | 18 | 0 | .01 | 0 | 2.91 | 2.81 |
| 20A | 102 | 5.09 | 55 | 21 | 1.73 | 19 | 55 | 2.39 | 26 | 3 | .09 | 1 | 9.29 | 8.88 |
| 20B | 94 | 4.69 | 61 | 29 | 2.39 | 31 | 14 | .61 | 8 | 1 | .03 | 0 | 7.71 | 7.72 |
| 21A | 55 | 2.74 | 56 | 21 | 1.73 | 35 | 9 | .40 | 8 | 1 | .03 | 1 | 4.90 | 4.91 |
| 21B | 57 | 2.84 | 54 | 17 | 1.40 | 26 | 23 | 1.00 | 19 | 2 | .05 | 1 | 5.29 | 5.08 |
| 22A | 121 | 6.03 | 55 | 44 | 3.62 | 33 | 29 | 1.26 | 12 | 1 | .03 | 0 | 10.95 | 11.25 |
| 22B | 131 | 6.53 | 55 | 44 | 3.62 | 30 | 41 | 1.78 | 15 | 1 | .03 | 0 | 11.96 | 12.33 |

* INDICATES ANION AND CATION TOTALS DON'T LIE WITHIN 10% OF EACH OTHER.

MAJOR ION CHEMISTRY

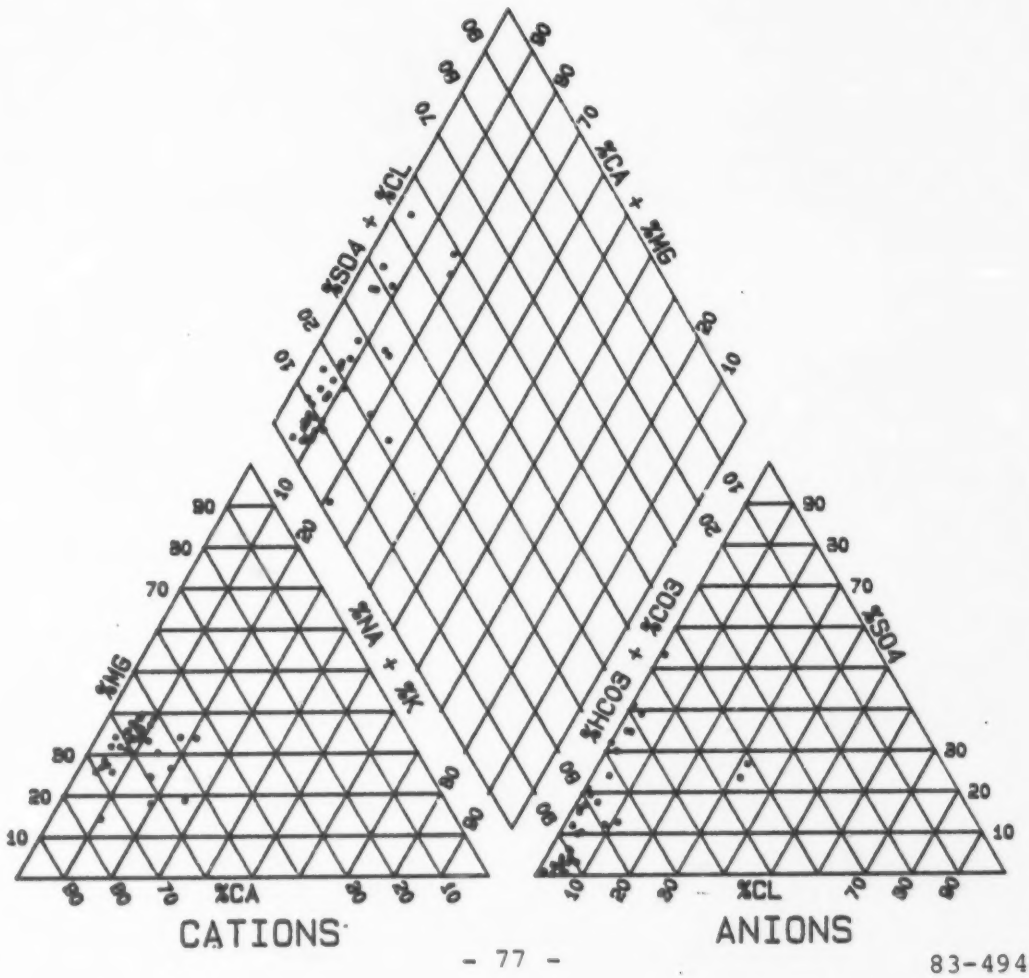
TBTGS ASH
MAY 19 1982
TYPE - WATER

ASH CELL AREA GROUNDWATER QUALITY- TBTGS

| | ANIONS | | | | | | | | | | | | ANION TOTAL | CATION TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CL | | | SO4 | | | HCO3 | | | CO3 | | | | |
| LOCATION | MG/L | EPM | %EPM | MG/L | EPM | %EPM | MG/L | EPM | %EPM | MG/L | EPM | %EPM | | |
| 01A | 35 | .99 | 9 | 65 | 1.35 | 12 | 543 | 8.90 | 79 | 0 | .00 | 0 | 11.24 | 12.43 |
| 01B | 11 | .31 | 3 | 168 | 3.50 | 39 | 318 | 5.22 | 58 | 0 | .00 | 0 | 9.02 | 9.30 |
| 02A | 2 | .06 | 1 | 63 | 1.31 | 21 | 300 | 4.92 | 78 | 0 | .00 | 0 | 6.29 | 7.01* |
| 02B | 5 | .13 | 2 | 46 | .96 | 15 | 322 | 5.28 | 83 | 0 | .00 | 0 | 6.36 | 7.10* |
| 03A | 6 | .16 | 2 | 43 | .89 | 12 | 398 | 6.52 | 86 | 0 | .00 | 0 | 7.58 | 8.40 |
| 03B | 8 | .21 | 2 | 153 | 3.18 | 35 | 353 | 5.78 | 63 | 0 | .00 | 0 | 9.18 | 9.54 |
| 04A | 9 | .25 | 4 | 14 | .29 | 4 | 388 | 6.36 | 92 | 0 | .00 | 0 | 6.89 | 6.41 |
| 04B | 11 | .31 | 3 | 168 | 3.50 | 30 | 479 | 7.86 | 67 | 0 | .00 | 0 | 11.66 | 11.15 |
| 04C | 9 | .26 | 3 | 11 | .23 | 2 | 558 | 9.14 | 95 | 0 | .00 | 0 | 9.63 | 9.34 |
| 05A | 18 | .51 | 6 | 14 | .29 | 4 | 457 | 7.50 | 90 | 0 | .00 | 0 | 8.30 | 7.57 |
| 05B | 11 | .31 | 3 | 148 | 3.08 | 35 | 337 | 5.52 | 62 | 0 | .00 | 0 | 8.91 | 8.45 |
| 06A | 16 | .45 | 4 | 1 | .02 | 0 | 704 | 11.54 | 96 | 0 | .00 | 0 | 12.01 | 11.72 |
| 06B | 4 | .12 | 1 | 304 | 6.33 | 41 | 545 | 8.94 | 58 | 0 | .00 | 0 | 15.39 | 14.66 |
| 07A | 11 | .31 | 4 | 35 | .73 | 10 | 388 | 6.36 | 86 | 0 | .00 | 0 | 7.40 | 7.02 |
| 07B | 9 | .26 | 4 | 11 | .23 | 4 | 368 | 6.04 | 93 | 0 | .00 | 0 | 6.53 | 6.05 |
| 08A | 5 | .14 | 2 | 3 | .05 | 1 | 476 | 7.80 | 98 | 0 | .00 | 0 | 7.99 | 7.48 |
| 08B | 14 | .39 | 6 | 1 | .03 | 0 | 353 | 5.78 | 93 | 0 | .00 | 0 | 6.20 | 5.77 |
| 09A | 5 | .14 | 1 | 282 | 5.87 | 53 | 305 | 5.00 | 45 | 0 | .00 | 0 | 11.01 | 11.58 |
| 09B | 11 | .31 | 6 | 8 | .16 | 3 | 303 | 4.96 | 91 | 0 | .00 | 0 | 5.42 | 4.93 |
| 10A | 9 | .25 | 3 | 6 | .13 | 2 | 436 | 7.14 | 95 | 0 | .00 | 0 | 7.52 | 6.95 |
| 10B | 5 | .15 | 2 | 4 | .07 | 1 | 565 | 9.26 | 98 | 0 | .00 | 0 | 9.48 | 9.27 |
| 11A | 18 | .51 | 6 | 1 | .02 | 0 | 503 | 8.24 | 94 | 0 | .00 | 0 | 8.77 | 8.75 |
| 11B | 13 | .37 | 4 | 10 | .21 | 2 | 575 | 9.42 | 94 | 0 | .00 | 0 | 9.99 | 9.59 |
| 12A | 19 | .54 | 5 | 13 | .27 | 2 | 661 | 10.84 | 93 | 0 | .00 | 0 | 11.64 | 11.49 |
| 12B | 30 | .85 | 8 | 16 | .33 | 3 | 614 | 10.06 | 90 | 0 | .00 | 0 | 11.24 | 11.12 |
| 13A | 10 | .28 | 5 | 6 | .11 | 2 | 340 | 5.58 | 93 | 0 | .00 | 0 | 5.97 | 6.01 |
| 13B | 10 | .27 | 5 | 28 | .58 | 10 | 290 | 4.76 | 85 | 0 | .00 | 0 | 5.61 | 5.86 |
| 15A | 14 | .39 | 5 | 3 | .06 | 1 | 422 | 6.92 | 94 | 0 | .00 | 0 | 7.37 | 7.26 |
| 15B | 14 | .39 | 4 | 28 | .58 | 6 | 516 | 8.46 | 90 | 0 | .00 | 0 | 9.43 | 9.56 |
| 16A | 12 | .34 | 5 | 19 | .40 | 6 | 379 | 6.22 | 89 | 0 | .00 | 0 | 6.95 | 6.49 |
| 16B | 7 | .19 | 2 | 64 | 1.33 | 17 | 388 | 6.36 | 81 | 0 | .00 | 0 | 7.88 | 8.07 |
| 18A | 5 | .15 | 2 | 59 | 1.23 | 19 | 303 | 4.96 | 78 | 0 | .00 | 0 | 6.33 | 6.40 |
| 18B | 3 | .09 | 2 | 40 | .83 | 16 | 259 | 4.24 | 82 | 0 | .00 | 0 | 5.16 | 5.46 |
| 19B | 32 | .90 | 32 | 36 | .75 | 27 | 71 | 1.16 | 41 | 0 | .00 | 0 | 2.81 | 2.91 |
| 20A | 15 | .42 | 5 | 75 | 1.56 | 18 | 421 | 6.90 | 78 | 0 | .00 | 0 | 8.88 | 9.29 |
| 20B | 11 | .31 | 4 | 89 | 1.85 | 24 | 339 | 5.56 | 72 | 0 | .00 | 0 | 7.72 | 7.71 |
| 21A | 20 | .56 | 11 | 30 | .62 | 13 | 227 | 3.72 | 76 | 0 | .00 | 0 | 4.91 | 4.90 |
| 21B | 58 | 1.63 | 32 | 57 | 1.19 | 23 | 138 | 2.26 | 44 | 0 | .00 | 0 | 5.08 | 5.29 |
| 22A | 21 | .59 | 5 | 25 | .52 | 5 | 619 | 10.14 | 90 | 0 | .00 | 0 | 11.25 | 10.95 |
| 22B | 2 | .06 | 0 | 190 | 3.95 | 32 | 508 | 8.32 | 67 | 0 | .00 | 0 | 12.33 | 11.96 |

* INDICATES ANION AND CATION TOTALS DON'T LIE WITHIN 10% OF EACH OTHER.

MAJOR ION CHEMISTRY
TBTGS ASH
MAY 19 1982
TYPE - WATER
ASH CELL AREA GROUNDWATER QUALITY






83-494

MAJOR ION CHEMISTRY

TBTGS ASH
JULY 23 1982
TYPE - WATER

ASH CELL AREA GROUNDWATER QUALITY- ION BALANCES

| LOCATION | CATIONS | | | | | | | | | | | | CATION TOTAL | ANION TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CA | | | MG | | | NA | | | K | | | | |
| | MG/L | EPM | %EPM | MG/L | EPM | %EPM | MG/L | EPM | %EPM | MG/L | EPM | %EPM | | |
| 01A | 138 | 6.88 | 57 | 51 | 4.20 | 35 | 20 | .87 | 7 | 2 | .05 | 0 | 12.00 | 14.39* |
| 01B | 134 | 6.68 | 61 | 44 | 3.62 | 33 | 13 | .57 | 5 | 2 | .05 | 0 | 10.92 | 12.29* |
| 02A | 82 | 4.09 | 57 | 32 | 2.63 | 36 | 11 | .48 | 7 | 1 | .03 | 0 | 7.24 | 8.19* |
| 02B | 100 | 4.99 | 69 | 22 | 1.81 | 25 | 8 | .35 | 5 | 3 | .07 | 1 | 7.22 | 8.59* |
| 03A | 87 | 4.34 | 58 | 31 | 2.55 | 34 | 13 | .57 | 8 | 1 | .03 | 0 | 7.49 | 8.92* |
| 03B | 108 | 5.39 | 65 | 28 | 2.30 | 28 | 12 | .52 | 6 | 1 | .02 | 0 | 8.24 | 9.54* |
| 04A | 64 | 3.19 | 56 | 22 | 1.81 | 32 | 16 | .70 | 12 | 1 | .03 | 1 | 5.73 | 6.70* |
| 04B | 113 | 5.64 | 57 | 23 | 1.89 | 19 | 52 | 2.26 | 23 | 2 | .05 | 0 | 9.84 | 13.41* |
| 04C | 99 | 4.94 | 58 | 35 | 2.88 | 34 | 14 | .61 | 7 | 1 | .03 | 0 | 8.46 | 9.77* |
| 05A | 83 | 4.14 | 57 | 30 | 2.47 | 34 | 15 | .65 | 9 | 1 | .04 | 0 | 7.30 | 7.99 |
| 05B | 64 | 3.19 | 59 | 22 | 1.81 | 33 | 9 | .39 | 7 | 1 | .02 | 0 | 5.41 | 6.15* |
| 06A | 117 | 5.84 | 56 | 45 | 3.70 | 35 | 21 | .91 | 9 | 1 | .03 | 0 | 10.49 | 12.40* |
| 06B | 133 | 6.63 | 51 | 65 | 5.35 | 41 | 25 | 1.09 | 8 | 2 | .04 | 0 | 13.11 | 15.90* |
| 07A | 69 | 3.44 | 55 | 26 | 2.14 | 34 | 15 | .65 | 10 | 1 | .02 | 0 | 6.25 | 7.35* |
| 07B | 65 | 3.24 | 54 | 27 | 2.22 | 37 | 11 | .48 | 8 | 0 | .01 | 0 | 5.95 | 6.95* |
| 08A | 77 | 3.84 | 56 | 31 | 2.55 | 37 | 10 | .43 | 6 | 1 | .03 | 0 | 6.85 | 7.99* |
| 08B | 124 | 6.18 | 58 | 46 | 3.79 | 36 | 15 | .65 | 6 | 1 | .02 | 0 | 10.65 | 9.36* |
| 09A | 56 | 2.79 | 53 | 23 | 1.89 | 36 | 12 | .52 | 10 | 1 | .03 | 0 | 5.23 | 6.04* |
| 09B | 50 | 2.49 | 57 | 18 | 1.48 | 34 | 8 | .35 | 8 | 1 | .03 | 1 | 4.35 | 4.78 |
| 10A | 75 | 3.74 | 54 | 29 | 2.39 | 35 | 16 | .70 | 10 | 2 | .04 | 1 | 6.86 | 7.52 |
| 10B | 76 | 3.79 | 46 | 34 | 2.80 | 34 | 39 | 1.70 | 20 | 1 | .03 | 0 | 8.32 | 9.80* |
| 11A | 78 | 3.89 | 50 | 36 | 2.96 | 38 | 19 | .83 | 11 | 1 | .03 | 0 | 7.71 | 8.96* |
| 11B | 100 | 4.99 | 52 | 46 | 3.79 | 40 | 17 | .74 | 8 | 2 | .04 | 0 | 9.55 | 10.63* |
| 12A | 101 | 5.04 | 51 | 43 | 3.54 | 36 | 27 | 1.17 | 12 | 3 | .07 | 1 | 9.82 | 10.88 |
| 12B | 121 | 6.03 | 60 | 35 | 2.88 | 29 | 23 | 1.00 | 10 | 3 | .08 | 1 | 10.00 | 11.22* |
| 13A | 64 | 3.19 | 56 | 24 | 1.98 | 35 | 12 | .52 | 9 | 1 | .03 | 1 | 5.72 | 5.91 |
| 13B | 51 | 2.54 | 52 | 22 | 1.81 | 37 | 12 | .52 | 11 | 1 | .03 | 1 | 4.90 | 5.22 |
| 15A | 79 | 3.94 | 56 | 30 | 2.47 | 35 | 12 | .52 | 7 | 2 | .05 | 1 | 6.98 | 7.25 |
| 15B | 102 | 5.09 | 60 | 36 | 2.96 | 35 | 9 | .39 | 5 | 2 | .05 | 1 | 8.49 | 9.62* |
| 16A | 75 | 3.74 | 56 | 30 | 2.47 | 37 | 10 | .43 | 7 | 2 | .04 | 1 | 6.68 | 6.73 |
| 16B | 103 | 5.14 | 72 | 19 | 1.56 | 22 | 10 | .43 | 6 | 1 | .02 | 0 | 7.16 | 7.37 |
| 18A | 94 | 4.69 | 60 | 20 | 1.65 | 21 | 32 | 1.39 | 18 | 2 | .05 | 1 | 7.77 | 7.82 |
| 18B | 78 | 3.89 | 64 | 19 | 1.56 | 26 | 13 | .57 | 9 | 2 | .04 | 1 | 6.06 | 6.24 |
| 19A | 68 | 3.39 | 61 | 18 | 1.48 | 27 | 15 | .65 | 12 | 2 | .05 | 1 | 5.57 | 5.50 |
| 19B | 28 | 1.40 | 43 | 11 | .91 | 28 | 21 | .91 | 28 | 1 | .02 | 1 | 3.23 | 3.12 |
| 20A | 122 | 6.08 | 55 | 30 | 2.47 | 22 | 58 | 2.52 | 23 | 3 | .08 | 1 | 11.16 | 11.53 |
| 20B | 108 | 5.39 | 61 | 34 | 2.80 | 32 | 14 | .61 | 7 | 2 | .05 | 1 | 8.84 | 8.73 |

* INDICATES ANION AND CATION TOTALS DON'T LIE WITHIN 10% OF EACH OTHER.

MAJOR ION CHEMISTRY

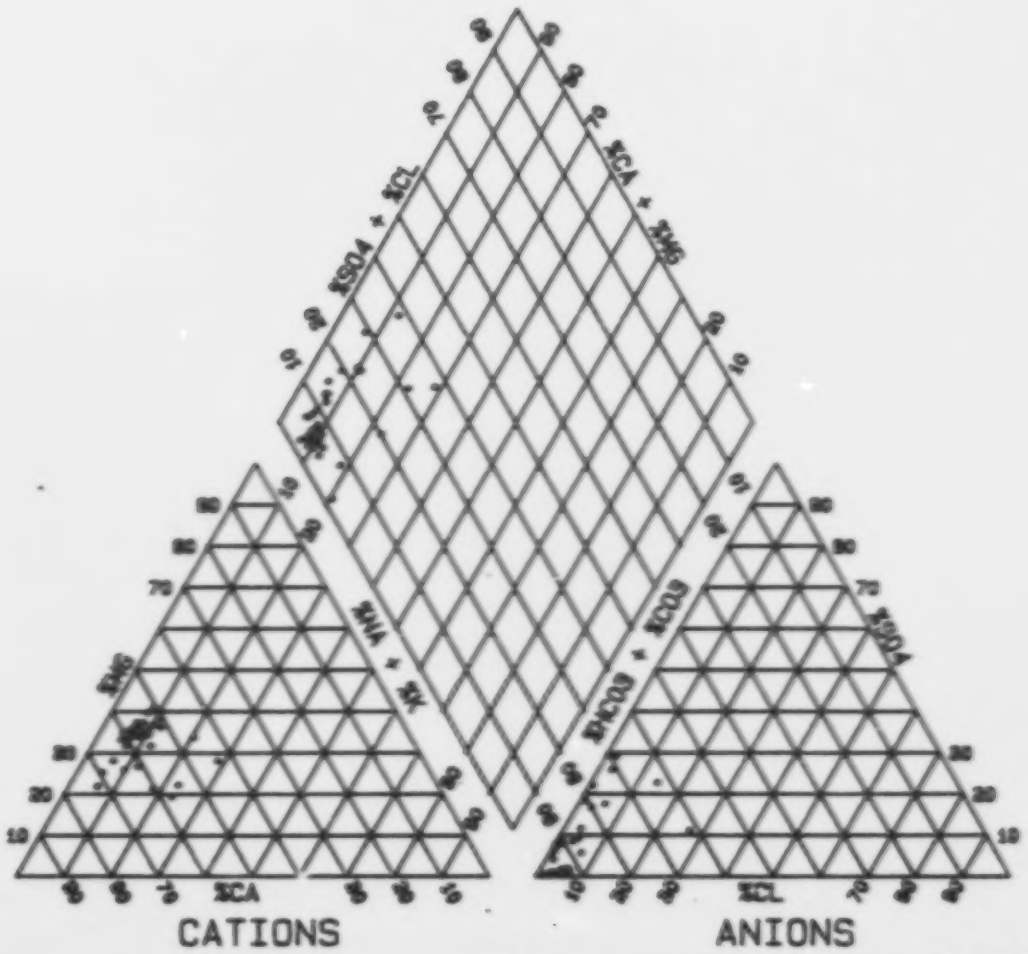
TBTOS ASH
JULY 23 1982
TYPE - WATER

ASH CELL AREA GROUNDWATER QUALITY- ION BALANCES

| | ANIONS | | | | | | | | | | | | ANION TOTAL | CATION TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CL | | | SO4 | | | HCO3 | | | CO3 | | | | |
| LOCATION | MG/L | EPM | %EPM | MG/L | EPM | %EPM | MG/L | EPM | %EPM | MG/L | EPM | %EPM | | |
| 01A | 35 | .99 | 7 | 39 | .81 | 6 | 769 | 12.60 | 88 | 0 | .00 | 0 | 14.39 | 12.00* |
| 01B | 17 | .48 | 4 | 68 | 1.42 | 12 | 634 | 10.40 | 85 | 0 | .00 | 0 | 12.29 | 10.92* |
| 02A | 3 | .10 | 1 | 72 | 1.50 | 18 | 403 | 6.60 | 81 | 0 | .00 | 0 | 8.19 | 7.24* |
| 02B | 3 | .08 | 1 | 25 | .52 | 6 | 488 | 8.00 | 93 | 0 | .00 | 0 | 8.59 | 7.22* |
| 03A | 6 | .17 | 2 | 17 | .35 | 4 | 512 | 8.40 | 94 | 0 | .00 | 0 | 8.92 | 7.49* |
| 03B | 7 | .19 | 2 | 36 | .75 | 8 | 525 | 8.60 | 90 | 0 | .00 | 0 | 9.54 | 8.24* |
| 04A | 10 | .28 | 4 | 1 | .02 | 0 | 390 | 6.40 | 96 | 0 | .00 | 0 | 6.70 | 5.73* |
| 04B | 12 | .34 | 3 | 186 | 3.87 | 29 | 561 | 9.20 | 69 | 0 | .00 | 0 | 13.41 | 9.84* |
| 04C | 10 | .28 | 3 | 4 | .09 | 1 | 573 | 9.40 | 96 | 0 | .00 | 0 | 9.77 | 8.46* |
| 05A | 18 | .51 | 6 | 4 | .09 | 1 | 451 | 7.40 | 93 | 0 | .00 | 0 | 7.99 | 7.30 |
| 05B | 8 | .23 | 4 | 25 | .52 | 8 | 329 | 5.40 | 88 | 0 | .00 | 0 | 6.15 | 5.41* |
| 06A | 13 | .37 | 3 | 2 | .04 | 0 | 732 | 12.00 | 97 | 0 | .00 | 0 | 12.40 | 10.49* |
| 06B | 6 | .16 | 1 | 45 | .94 | 6 | 903 | 14.80 | 93 | 0 | .00 | 0 | 15.90 | 13.11* |
| 07A | 15 | .42 | 6 | 6 | .13 | 2 | 415 | 6.80 | 92 | 0 | .00 | 0 | 7.35 | 6.25* |
| 07B | 10 | .28 | 4 | 3 | .07 | 1 | 403 | 6.60 | 95 | 0 | .00 | 0 | 6.95 | 5.95* |
| 08A | 6 | .17 | 2 | 1 | .02 | 0 | 476 | 7.80 | 98 | 0 | .00 | 0 | 7.99 | 6.85* |
| 08B | 1 | .04 | 0 | 35 | .73 | 8 | 525 | 8.60 | 92 | 0 | .00 | 0 | 9.36 | 10.65* |
| 09A | 15 | .42 | 7 | 1 | .01 | 0 | 342 | 5.60 | 93 | 0 | .00 | 0 | 6.04 | 5.23* |
| 09B | 11 | .31 | 6 | 3 | .07 | 1 | 268 | 4.40 | 92 | 0 | .00 | 0 | 4.78 | 4.35 |
| 10A | 10 | .28 | 4 | 2 | .04 | 1 | 439 | 7.20 | 96 | 0 | .00 | 0 | 7.52 | 6.86 |
| 10B | 6 | .17 | 2 | 1 | .03 | 0 | 586 | 9.60 | 98 | 0 | .00 | 0 | 9.80 | 8.32* |
| 11A | 19 | .54 | 6 | 1 | .02 | 0 | 512 | 8.40 | 94 | 0 | .00 | 0 | 8.96 | 7.71* |
| 11B | 12 | .34 | 3 | 4 | .09 | 1 | 622 | 10.20 | 96 | 0 | .00 | 0 | 10.63 | 9.55* |
| 12A | 18 | .51 | 5 | 9 | .18 | 2 | 622 | 10.20 | 94 | 0 | .00 | 0 | 10.88 | 9.82 |
| 12B | 21 | .59 | 5 | 1 | .03 | 0 | 647 | 10.60 | 94 | 0 | .00 | 0 | 11.22 | 10.00* |
| 13A | 10 | .28 | 5 | 2 | .03 | 1 | 342 | 5.60 | 95 | 0 | .00 | 0 | 5.91 | 5.72 |
| 13B | 11 | .31 | 6 | 44 | .92 | 18 | 244 | 4.00 | 77 | 0 | .00 | 0 | 5.22 | 4.90 |
| 15A | 15 | .42 | 6 | 1 | .02 | 0 | 415 | 6.80 | 94 | 0 | .00 | 0 | 7.25 | 6.98 |
| 15B | 17 | .48 | 5 | 7 | .14 | 1 | 549 | 9.00 | 94 | 0 | .00 | 0 | 9.62 | 8.49* |
| 16A | 11 | .31 | 5 | 30 | .62 | 9 | 354 | 5.80 | 86 | 0 | .00 | 0 | 6.73 | 6.68 |
| 16B | 10 | .28 | 4 | 33 | .69 | 9 | 390 | 6.40 | 87 | 0 | .00 | 0 | 7.37 | 7.16 |
| 18A | 3 | .08 | 1 | 26 | .54 | 7 | 439 | 7.20 | 92 | 0 | .00 | 0 | 7.82 | 7.77 |
| 18B | 2 | .07 | 1 | 66 | 1.37 | 22 | 293 | 4.80 | 77 | 0 | .00 | 0 | 6.24 | 6.06 |
| 19A | 53 | 1.49 | 27 | 29 | .60 | 11 | 207 | 3.40 | 62 | 0 | .00 | 0 | 5.50 | 5.57 |
| 19B | 16 | .45 | 14 | 34 | .71 | 23 | 120 | 1.96 | 63 | 0 | .00 | 0 | 3.12 | 3.23 |
| 20A | 15 | .42 | 4 | 92 | 1.91 | 17 | 561 | 9.20 | 80 | 0 | .00 | 0 | 11.53 | 11.16 |
| 20B | 10 | .28 | 3 | 108 | 2.25 | 26 | 378 | 6.20 | 71 | 0 | .00 | 0 | 8.73 | 8.84 |

* INDICATES ANION AND CATION TOTALS DON'T LIE WITHIN 10% OF EACH OTHER.

MAJOR ION CHEMISTRY
TBTGS ASH
JULY 23 1982
TYPE - WATER
ASH CELL AREA GROUNDWATER QUALITY






83-494

MAJOR ION CHEMISTRY

TBTGS ASH
OCT 15 1982
TYPE - WATER

ASH CELL AREA GROUNDWATER QUALITY- ION BALANCES

| | CATIONS | | | | | | | | | | | | CATION TOTAL | ANION TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CA | | | MG | | | NA | | | K | | | | |
| LOCATION | MG/L | EPM | %EPM | MG/L | EPM | %EPM | MG/L | EPM | %EPM | MG/L | EPM | %EPM | | |
| 01A | 191 | 9.53 | 57 | 71 | 5.84 | 35 | 31 | 1.35 | 8 | 2 | .04 | 0 | 16.76 | 16.19 |
| 01B | 142 | 7.08 | 59 | 53 | 4.36 | 36 | 13 | .57 | 5 | 1 | .04 | 0 | 12.05 | 11.68 |
| 02A | 103 | 5.14 | 57 | 40 | 3.29 | 37 | 12 | .52 | 6 | 1 | .03 | 0 | 8.98 | 8.88 |
| 02B | 154 | 7.68 | 70 | 35 | 2.88 | 26 | 9 | .38 | 3 | 2 | .06 | 1 | 11.00 | 5.93* |
| 03A | 114 | 5.69 | 58 | 40 | 3.29 | 34 | 18 | .78 | 8 | 1 | .03 | 0 | 9.79 | 9.80 |
| 03B | 156 | 7.78 | 67 | 42 | 3.46 | 30 | 18 | .42 | 4 | 1 | .02 | 0 | 11.68 | 11.93 |
| 04A | 81 | 4.04 | 57 | 27 | 2.22 | 31 | 19 | .83 | 12 | 1 | .03 | 0 | 7.12 | 7.25 |
| 04B | 163 | 8.13 | 38 | 37 | 3.05 | 22 | 62 | 2.70 | 19 | 2 | .04 | 0 | 13.91 | 13.69 |
| 04C | 115 | 5.74 | 59 | 40 | 3.29 | 34 | 15 | .65 | 7 | 1 | .03 | 0 | 9.71 | 9.83 |
| 05A | 93 | 4.64 | 58 | 33 | 2.72 | 34 | 14 | .61 | 8 | 1 | .03 | 0 | 7.99 | 8.05 |
| 05B | 65 | 3.24 | 57 | 26 | 2.14 | 37 | 8 | .34 | 6 | 0 | .01 | 0 | 5.73 | 5.98 |
| 06A | 148 | 7.38 | 55 | 56 | 4.61 | 35 | 30 | 1.30 | 10 | 1 | .03 | 0 | 13.32 | 13.04 |
| 06B | 170 | 8.48 | 54 | 79 | 6.50 | 41 | 18 | .78 | 5 | 1 | .01 | 0 | 15.78 | 16.01 |
| 07A | 86 | 4.29 | 57 | 32 | 2.63 | 35 | 14 | .61 | 8 | 1 | .01 | 0 | 7.54 | 7.51 |
| 07B | 131 | 6.53 | 59 | 47 | 3.87 | 35 | 14 | .61 | 6 | 0 | .00 | 0 | 11.02 | 10.98 |
| 08A | 100 | 4.99 | 57 | 40 | 3.29 | 38 | 9 | .38 | 4 | 1 | .02 | 0 | 8.68 | 8.74 |
| 09A | 69 | 3.44 | 55 | 28 | 2.30 | 37 | 11 | .48 | 8 | 1 | .02 | 0 | 6.25 | 6.26 |
| 09B | 37 | 2.84 | 59 | 19 | 1.56 | 33 | 8 | .37 | 8 | 1 | .03 | 1 | 4.80 | 3.19* |
| 10A | 85 | 4.24 | 54 | 35 | 2.88 | 37 | 16 | .70 | 9 | 1 | .03 | 0 | 7.84 | 7.84 |
| 10B | 87 | 4.34 | 45 | 40 | 3.29 | 34 | 46 | 2.00 | 21 | 1 | .03 | 0 | 9.66 | 9.66 |
| 11A | 96 | 4.79 | 51 | 44 | 3.62 | 39 | 21 | .91 | 10 | 1 | .02 | 0 | 9.34 | 9.45 |
| 11B | 126 | 6.28 | 53 | 48 | 4.94 | 41 | 15 | .65 | 5 | 1 | .03 | 0 | 11.98 | 12.01 |
| 13A | 71 | 3.54 | 56 | 28 | 2.30 | 36 | 11 | .48 | 8 | 1 | .03 | 0 | 6.35 | 6.44 |
| 13B | 57 | 2.84 | 52 | 26 | 2.14 | 39 | 10 | .42 | 8 | 1 | .02 | 0 | 5.42 | 5.41 |
| 15A | 83 | 4.14 | 57 | 32 | 2.63 | 36 | 11 | .48 | 7 | 2 | .05 | 1 | 7.30 | 7.44 |
| 15B | 105 | 5.24 | 58 | 40 | 3.29 | 37 | 10 | .43 | 5 | 2 | .05 | 1 | 9.01 | 9.17 |
| 16A | 86 | 4.29 | 58 | 32 | 2.63 | 36 | 10 | .43 | 6 | 1 | .03 | 0 | 7.38 | 7.87 |
| 16B | 114 | 5.69 | 71 | 23 | 1.89 | 24 | 9 | .37 | 5 | 1 | .02 | 0 | 7.97 | 8.05 |
| 18A | 95 | 4.74 | 59 | 26 | 2.14 | 27 | 25 | 1.09 | 14 | 1 | .03 | 0 | 8.00 | 7.81 |
| 18B | 108 | 5.39 | 65 | 30 | 2.47 | 30 | 10 | .42 | 5 | 1 | .03 | 0 | 8.30 | 8.15 |
| 19A | 87 | 4.34 | 65 | 21 | 1.73 | 26 | 13 | .57 | 8 | 2 | .04 | 1 | 6.67 | .00* |
| 19B | 35 | 1.75 | 52 | 12 | .99 | 29 | 14 | .61 | 18 | 0 | .01 | 0 | 3.35 | .00* |
| 20A | 134 | 6.68 | 59 | 39 | 3.21 | 28 | 33 | 1.43 | 13 | 3 | .08 | 1 | 11.40 | 11.42 |
| 20B | 122 | 6.08 | 61 | 39 | 3.21 | 32 | 13 | .57 | 6 | 2 | .04 | 0 | 9.90 | 10.10 |
| 21A | 50 | 2.49 | 57 | 18 | 1.48 | 34 | 9 | .40 | 9 | 1 | .03 | 1 | 4.40 | 4.46 |
| 21B | 50 | 2.49 | 56 | 13 | 1.07 | 24 | 20 | .87 | 19 | 2 | .05 | 1 | 4.49 | .00* |
| 22A | 127 | 6.33 | 55 | 45 | 3.70 | 32 | 33 | 1.43 | 12 | 2 | .04 | 0 | 11.51 | 11.61 |
| 22B | 134 | 6.68 | 54 | 39 | 3.21 | 26 | 55 | 2.39 | 19 | 1 | .03 | 0 | 12.31 | 12.29 |

* INDICATES ANION AND CATION TOTALS DON'T LIE WITHIN 10% OF EACH OTHER.

MAJOR ION CHEMISTRY

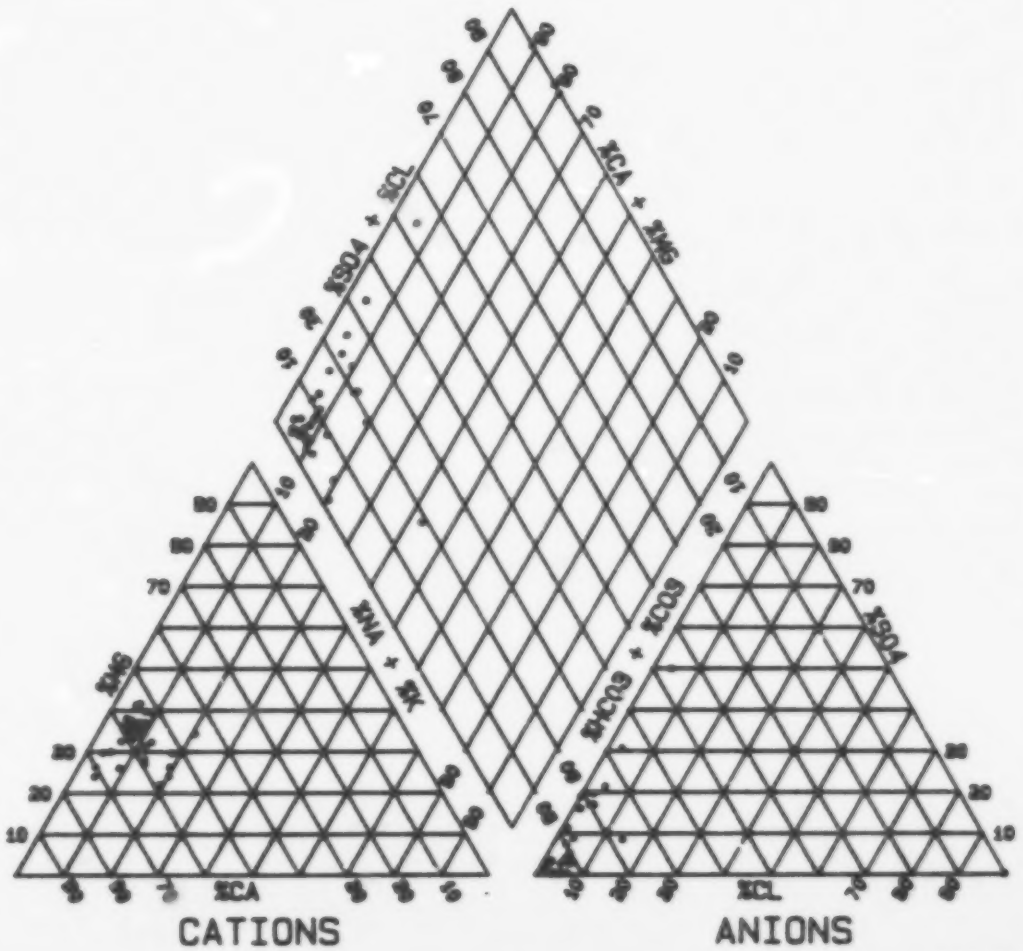
TBTGS ASH
OCT 15 1982
TYPE - WATER

ASH CELL AREA GROUNDWATER QUALITY- ION BALANCES

| | ANIONS | | | | | | | | | | | | ANION TOTAL | CATION TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CL | | | SO4 | | | HCO3 | | | CO3 | | | | |
| LOCATION | MG/L | EPM | %EPM | MG/L | EPM | %EPM | MG/L | EPM | %EPM | MG/L | EPM | %EPM | | |
| 01A | 34 | .96 | 6 | 23 | .48 | 3 | 828 | 13.58 | 84 | 35 | 1.18 | 7 | 16.19 | 16.76 |
| 01B | 18 | .51 | 4 | 120 | 2.50 | 21 | 523 | 8.58 | 73 | 3 | .10 | 1 | 11.68 | 12.05 |
| 02A | 5 | .13 | 1 | 48 | 1.00 | 11 | 467 | 7.66 | 86 | 3 | .10 | 1 | 8.88 | 8.98 |
| 02B | 2 | .05 | 1 | 10 | .20 | 3 | 340 | 5.58 | 94 | 3 | .10 | 2 | 5.93 | 11.00* |
| 03A | 6 | .17 | 2 | 14 | .29 | 3 | 564 | 9.24 | 94 | 3 | .10 | 1 | 9.80 | 9.79 |
| 03B | 7 | .18 | 2 | 16 | .33 | 3 | 691 | 11.32 | 95 | 3 | .10 | 1 | 11.93 | 11.68 |
| 04A | 9 | .26 | 4 | 2 | .03 | 0 | 418 | 6.86 | 95 | 3 | .10 | 1 | 7.25 | 7.12 |
| 04B | 10 | .27 | 2 | 22 | .46 | 3 | 784 | 12.86 | 94 | 3 | .10 | 1 | 13.69 | 13.91 |
| 04C | 10 | .27 | 3 | 3 | .06 | 1 | 573 | 9.40 | 96 | 3 | .10 | 1 | 9.83 | 9.71 |
| 05A | 18 | .51 | 6 | 9 | .19 | 2 | 443 | 7.26 | 90 | 3 | .10 | 1 | 8.05 | 7.99 |
| 05B | 8 | .24 | 4 | 25 | .52 | 9 | 312 | 5.12 | 86 | 3 | .10 | 2 | 5.98 | 5.73 |
| 06A | 15 | .42 | 3 | 0 | .00 | 0 | 764 | 12.52 | 96 | 3 | .10 | 1 | 13.04 | 13.32 |
| 06B | 8 | .22 | 1 | 7 | .14 | 1 | 949 | 15.56 | 97 | 3 | .10 | 1 | 16.01 | 15.78 |
| 07A | 12 | .34 | 5 | 14 | .29 | 4 | 414 | 6.78 | 90 | 3 | .10 | 1 | 7.51 | 7.54 |
| 07B | 7 | .20 | 2 | 84 | 1.75 | 16 | 545 | 8.94 | 81 | 3 | .10 | 1 | 10.98 | 11.02 |
| 08A | 4 | .11 | 1 | 6 | .13 | 2 | 512 | 8.40 | 96 | 3 | .10 | 1 | 8.74 | 8.68 |
| 09A | 15 | .42 | 7 | 1 | .01 | 0 | 349 | 5.72 | 91 | 3 | .10 | 2 | 6.26 | 6.25 |
| 09B | 12 | .34 | 11 | 1 | .01 | 0 | 167 | 2.74 | 86 | 3 | .10 | 3 | 3.19 | 4.80* |
| 10A | 11 | .31 | 4 | 1 | .01 | 0 | 453 | 7.42 | 95 | 3 | .10 | 1 | 7.84 | 7.84 |
| 10B | 6 | .17 | 2 | 1 | .02 | 0 | 572 | 9.38 | 97 | 3 | .10 | 1 | 9.66 | 9.66 |
| 11A | 17 | .48 | 5 | 1 | .02 | 0 | 540 | 8.86 | 94 | 3 | .10 | 1 | 9.45 | 9.34 |
| 11B | 13 | .35 | 3 | 2 | .05 | 0 | 703 | 11.52 | 96 | 3 | .10 | 1 | 12.01 | 11.90 |
| 13A | 10 | .28 | 4 | 8 | .17 | 3 | 360 | 5.90 | 92 | 3 | .10 | 2 | 6.44 | 6.35 |
| 13B | 10 | .28 | 5 | 13 | .27 | 5 | 290 | 4.76 | 88 | 3 | .10 | 2 | 5.41 | 5.42 |
| 15A | 14 | .39 | 5 | 0 | .01 | 0 | 423 | 6.94 | 93 | 3 | .10 | 1 | 7.44 | 7.30 |
| 15B | 16 | .45 | 5 | 4 | .08 | 1 | 521 | 8.54 | 93 | 3 | .10 | 1 | 9.17 | 9.01 |
| 16A | 12 | .34 | 4 | 188 | 3.91 | 50 | 215 | 3.52 | 45 | 3 | .10 | 1 | 7.87 | 7.38 |
| 16B | 10 | .28 | 3 | 118 | 2.46 | 31 | 318 | 5.22 | 65 | 3 | .10 | 1 | 8.05 | 7.97 |
| 18A | 12 | .34 | 4 | 63 | 1.31 | 17 | 335 | 5.50 | 70 | 20 | .66 | 8 | 7.81 | 8.00 |
| 18B | 10 | .27 | 3 | 28 | .58 | 7 | 393 | 6.44 | 79 | 26 | .86 | 11 | 8.15 | 8.30 |
| 19A | 0 | .00 | 0 | 0 | .00 | 0 | 0 | .00 | 0 | 0 | .00 | 0 | .00 | 6.67* |
| 19B | 0 | .00 | 0 | 0 | .00 | 0 | 0 | .00 | 0 | 0 | .00 | 0 | .00 | 3.35* |
| 20A | 13 | .37 | 3 | 93 | 1.94 | 17 | 550 | 9.02 | 79 | 3 | .10 | 1 | 11.42 | 11.40 |
| 20B | 10 | .28 | 3 | 95 | 1.98 | 20 | 472 | 7.74 | 77 | 3 | .10 | 1 | 10.10 | 9.90 |
| 21A | 23 | .65 | 15 | 18 | .37 | 8 | 204 | 3.34 | 75 | 3 | .10 | 2 | 4.46 | 4.40 |
| 21B | 0 | .00 | 0 | 0 | .00 | 0 | 0 | .00 | 0 | 0 | .00 | 0 | .00 | 4.49* |
| 22A | 19 | .54 | 5 | 27 | .56 | 5 | 636 | 10.42 | 90 | 3 | .10 | 1 | 11.61 | 11.51 |
| 22B | 2 | .04 | 0 | 112 | 2.33 | 19 | 599 | 9.82 | 80 | 3 | .10 | 1 | 12 29 | 12.31 |

* INDICATES ANION AND CATION TOTALS DON'T LIE WITHIN 10% OF EACH OTHER.

MAJOR ION CHEMISTRY
TBTGS ASH
OCT 15 1982
TYPE - WATER
ASH CELL AREA GROUNDWATER QUALITY




83-494

MAJOR ION CHEMISTRY

TBTGS ASH
NOV 18 1982
TYPE - WATER

ASH CELL AREA GROUNDWATER QUALITY- ION BALANCES

| | CATIONS | | | | | | | | | | | | CATION TOTAL | ANION TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CA | | | MG | | | NA | | | K | | | | |
| LOCATION | MG/L | EPM | %EPM | MG/L | EPM | %EPM | MG/L | EPM | %EPM | MG/L | EPM | %EPM | | |
| 01A | 173 | 8.63 | 57 | 65 | 5.35 | 35 | 27 | 1.17 | 8 | 2 | .04 | 0 | 15.20 | 15.54 |
| 01B | 121 | 6.03 | 59 | 46 | 3.79 | 37 | 10 | .43 | 4 | 1 | .02 | 0 | 10.28 | 10.82 |
| 02A | 100 | 4.99 | 57 | 39 | 3.21 | 37 | 11 | .48 | 5 | 2 | .04 | 0 | 8.72 | 9.00 |
| 02B | 146 | 7.28 | 69 | 35 | 2.88 | 27 | 9 | .37 | 3 | 2 | .05 | 0 | 10.58 | 10.91 |
| 03A | 107 | 5.34 | 57 | 40 | 3.29 | 35 | 17 | .74 | 8 | 1 | .04 | 0 | 9.40 | 9.76 |
| 03B | 154 | 7.68 | 65 | 45 | 3.70 | 31 | 9 | .38 | 3 | 4 | .09 | 1 | 11.86 | 12.52 |
| 04A | 75 | 3.74 | 56 | 27 | 2.22 | 33 | 16 | .70 | 10 | 1 | .03 | 0 | 6.69 | 7.10 |
| 04C | 110 | 5.49 | 58 | 40 | 3.29 | 35 | 14 | .61 | 6 | 1 | .03 | 0 | 9.42 | 9.85 |
| 05A | 88 | 4.39 | 58 | 32 | 2.63 | 35 | 13 | .57 | 7 | 1 | .03 | 0 | 7.62 | 7.92 |
| 05B | 73 | 3.64 | 59 | 26 | 2.14 | 35 | 8 | .35 | 6 | 1 | .02 | 0 | 6.15 | 6.47 |
| 06A | 143 | 7.13 | 56 | 53 | 4.36 | 34 | 26 | 1.13 | 9 | 2 | .04 | 0 | 12.66 | 6.51* |
| 06B | 141 | 7.03 | 51 | 74 | 6.09 | 44 | 14 | .61 | 4 | 1 | .02 | 0 | 13.75 | 14.36 |
| 07A | 84 | 4.19 | 54 | 35 | 2.88 | 37 | 14 | .61 | 8 | 1 | .02 | 0 | 7.70 | 8.07 |
| 07B | 148 | 7.38 | 61 | 51 | 4.20 | 34 | 14 | .61 | 5 | 0 | .01 | 0 | 12.20 | 12.67 |
| 08A | 100 | 4.99 | 55 | 42 | 3.46 | 38 | 12 | .52 | 6 | 1 | .03 | 0 | 9.00 | 9.65 |
| 08B | 142 | 7.08 | 52 | 59 | 4.86 | 36 | 38 | 1.65 | 12 | 2 | .04 | 0 | 13.63 | 13.95 |
| 09A | 65 | 3.24 | 54 | 27 | 2.22 | 37 | 11 | .48 | 8 | 1 | .03 | 0 | 5.97 | 6.35 |
| 09B | 54 | 2.69 | 59 | 19 | 1.56 | 34 | 7 | .32 | 7 | 1 | .02 | 0 | 4.60 | 4.94 |
| 10A | 81 | 4.04 | 53 | 35 | 2.88 | 38 | 15 | .65 | 9 | 1 | .03 | 0 | 7.60 | 7.85 |
| 10B | 92 | 4.59 | 45 | 45 | 3.70 | 37 | 41 | 1.78 | 18 | 2 | .04 | 0 | 10.12 | 10.32 |
| 11A | 92 | 4.59 | 51 | 42 | 3.46 | 38 | 22 | .96 | 11 | 1 | .02 | 0 | 9.02 | 9.35 |
| 11B | 126 | 6.28 | 52 | 62 | 5.10 | 42 | 16 | .70 | 6 | 1 | .03 | 0 | 12.11 | 12.53 |
| 12A | 121 | 6.03 | 53 | 48 | 3.95 | 34 | 32 | 1.39 | 12 | 3 | .08 | 1 | 11.46 | 11.32 |
| 12B | 161 | 8.03 | 61 | 49 | 4.03 | 31 | 24 | 1.04 | 8 | 3 | .08 | 1 | 13.19 | 13.37 |
| 13A | 71 | 3.54 | 56 | 29 | 2.39 | 38 | 9 | .37 | 6 | 1 | .03 | 0 | 6.33 | 6.44 |
| 13B | 52 | 2.59 | 50 | 27 | 2.22 | 42 | 9 | .40 | 8 | 1 | .02 | 0 | 5.24 | 5.41 |
| 15A | 77 | 3.84 | 56 | 31 | 2.55 | 37 | 11 | .48 | 7 | 2 | .05 | 1 | 6.92 | 7.11 |
| 15B | 109 | 5.44 | 58 | 43 | 3.54 | 37 | 10 | .42 | 4 | 2 | .05 | 1 | 9.44 | 9.70 |
| 16A | 93 | 4.64 | 57 | 37 | 3.05 | 37 | 11 | .48 | 6 | 1 | .03 | 0 | 8.20 | 8.07 |
| 16B | 125 | 6.23 | 67 | 33 | 2.72 | 29 | 9 | .40 | 4 | 1 | .02 | 0 | 9.37 | 9.22 |
| 18A | 108 | 5.39 | 62 | 29 | 2.39 | 28 | 20 | .87 | 10 | 1 | .03 | 0 | 8.68 | 8.82 |
| 18B | 108 | 5.39 | 66 | 29 | 2.39 | 29 | 9 | .39 | 5 | 1 | .02 | 0 | 8.18 | 8.02 |
| 19A | 73 | 3.64 | 63 | 21 | 1.73 | 30 | 9 | .38 | 7 | 1 | .03 | 1 | 5.78 | 5.92 |
| 19B | 25 | 1.25 | 50 | 11 | .91 | 36 | 7 | .32 | 13 | 0 | .01 | 1 | 2.48 | 2.58 |
| 20A | 141 | 7.03 | 58 | 48 | 3.95 | 32 | 26 | 1.13 | 9 | 2 | .06 | 1 | 12.17 | 12.20 |
| 20B | 128 | 6.38 | 61 | 43 | 3.54 | 34 | 12 | .52 | 5 | 2 | .04 | 0 | 10.49 | 10.78 |
| 21A | 55 | 2.74 | 55 | 22 | 1.81 | 37 | 8 | .37 | 7 | 1 | .04 | 1 | 4.96 | 5.01 |
| 21B | 36 | 1.80 | 50 | 11 | .91 | 25 | 19 | .83 | 23 | 2 | .05 | 1 | 3.58 | 3.29 |
| 22A | 123 | 6.13 | 54 | 44 | 3.62 | 32 | 35 | 1.52 | 13 | 2 | .05 | 0 | 11.32 | 11.67 |
| 22B | 140 | 6.98 | 55 | 49 | 4.03 | 32 | 39 | 1.70 | 13 | 1 | .03 | 0 | 12.74 | 12.48 |

* INDICATES ANION AND CATION TOTALS DON'T LIE WITHIN 10% OF EACH OTHER.

MAJOR ION CHEMISTRY

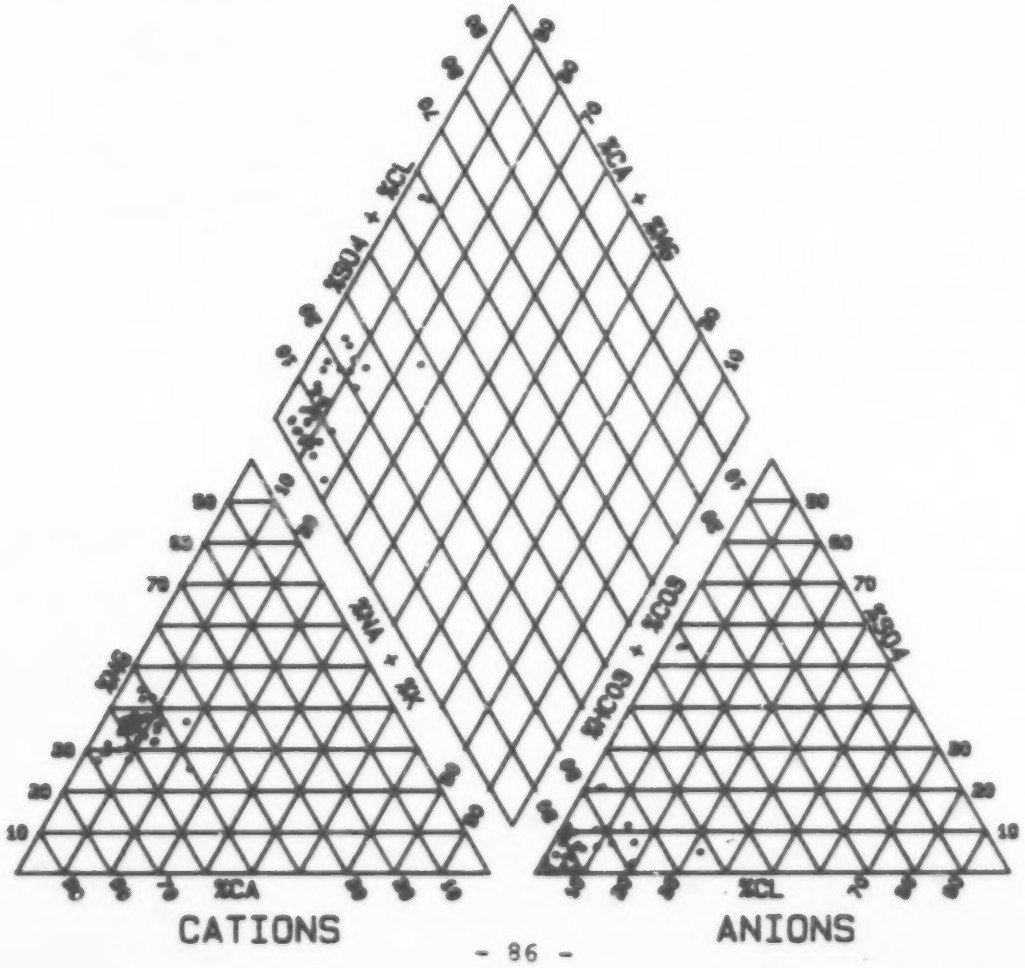
TBTGS ASH
NOV 18 1982
TYPE - WATER

ASH CELL AREA GROUNDWATER QUALITY- ION BALANCES

| | ANIONS | | | | | | | | | | | | ANION TOTAL | CATION TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CL | | | SO4 | | | HCO3 | | | CO3 | | | | |
| LOCATION | MG/L | EPM | %EPM | MG/L | EPM | %EPM | MG/L | EPM | %EPM | MG/L | EPM | %EPM | | |
| 01A | 32 | .90 | 6 | 51 | 1.05 | 7 | 823 | 13.50 | 87 | 3 | .10 | 1 | 15.54 | 15.20 |
| 01B | 30 | .84 | 8 | 54 | 1.12 | 10 | 534 | 8.76 | 81 | 3 | .10 | 1 | 10.82 | 10.28 |
| 02A | 5 | .14 | 2 | 48 | 1.01 | 11 | 473 | 7.76 | 86 | 3 | .10 | 1 | 9.00 | 8.72 |
| 02B | 2 | .07 | 1 | 17 | .35 | 3 | 634 | 10.40 | 95 | 3 | .10 | 1 | 10.91 | 10.56 |
| 03A | 8 | .21 | 2 | 33 | .69 | 7 | 534 | 8.76 | 90 | 3 | .10 | 1 | 9.76 | 9.40 |
| 03B | 10 | .28 | 2 | 6 | .12 | 1 | 666 | 10.92 | 87 | 36 | 1.20 | 10 | 12.52 | 11.86 |
| 04A | 10 | .27 | 4 | 1 | .02 | 0 | 410 | 6.72 | 95 | 3 | .10 | 1 | 7.10 | 6.69 |
| 04C | 9 | .27 | 3 | 4 | .09 | 1 | 573 | 9.40 | 95 | 3 | .10 | 1 | 9.85 | 9.42 |
| 05A | 18 | .50 | 6 | 14 | .28 | 4 | 429 | 7.04 | 89 | 3 | .10 | 1 | 7.92 | 7.62 |
| 05B | 6 | .16 | 2 | 30 | .63 | 10 | 340 | 5.58 | 86 | 3 | .10 | 2 | 6.47 | 6.15 |
| 06A | 17 | .48 | 7 | 18 | .37 | 6 | 339 | 5.56 | 85 | 3 | .10 | 2 | 6.51 | 12.66* |
| 06B | 51 | 1.43 | 10 | 43 | .89 | 6 | 728 | 11.94 | 83 | 3 | .10 | 1 | 14.36 | 13.75 |
| 07A | 16 | .44 | 5 | 24 | .49 | 6 | 429 | 7.04 | 87 | 3 | .10 | 1 | 8.07 | 7.70 |
| 07B | 11 | .32 | 3 | 53 | 1.09 | 9 | 681 | 11.16 | 88 | 3 | .10 | 1 | 12.67 | 12.20 |
| 08A | 4 | .12 | 1 | 8 | .17 | 2 | 565 | 9.26 | 96 | 3 | .10 | 1 | 9.65 | 9.00 |
| 08B | 12 | .33 | 2 | 29 | .60 | 4 | 788 | 12.92 | 93 | 3 | .10 | 1 | 13.95 | 13.63 |
| 09A | 18 | .50 | 8 | 2 | .05 | 1 | 348 | 5.70 | 90 | 3 | .10 | 2 | 6.35 | 5.97 |
| 09B | 12 | .32 | 7 | 1 | .01 | 0 | 274 | 4.50 | 91 | 3 | .10 | 2 | 4.94 | 4.60 |
| 10A | 12 | .32 | 4 | 1 | .01 | 0 | 453 | 7.42 | 94 | 3 | .10 | 1 | 7.85 | 7.60 |
| 10B | 11 | .30 | 3 | 1 | .03 | 0 | 604 | 9.90 | 96 | 3 | .10 | 1 | 10.32 | 10.12 |
| 11A | 16 | .46 | 5 | 1 | .01 | 0 | 536 | 8.78 | 94 | 3 | .10 | 1 | 9.35 | 9.02 |
| 11B | 13 | .35 | 3 | 2 | .04 | 0 | 734 | 12.04 | 96 | 3 | .10 | 1 | 12.53 | 12.11 |
| 12A | 13 | .37 | 3 | 2 | .05 | 0 | 622 | 10.20 | 90 | 21 | .70 | 6 | 11.32 | 11.46 |
| 12B | 14 | .38 | 3 | 1 | .01 | 0 | 786 | 12.88 | 96 | 3 | .10 | 1 | 13.37 | 13.19 |
| 13A | 10 | .29 | 5 | 12 | .25 | 4 | 354 | 5.80 | 90 | 3 | .10 | 2 | 6.44 | 6.33 |
| 13B | 11 | .30 | 6 | 11 | .23 | 4 | 292 | 4.78 | 88 | 3 | .10 | 2 | 5.41 | 5.24 |
| 15A | 14 | .39 | 6 | 3 | .06 | 1 | 400 | 6.56 | 92 | 3 | .10 | 1 | 7.11 | 6.92 |
| 15B | 18 | .51 | 5 | 9 | .18 | 2 | 544 | 8.92 | 92 | 3 | .10 | 1 | 9.70 | 9.44 |
| 16A | 13 | .36 | 5 | 212 | 4.41 | 55 | 195 | 3.20 | 40 | 3 | .10 | 1 | 8.07 | 8.20 |
| 16B | 12 | .32 | 4 | 241 | 5.02 | 54 | 231 | 3.78 | 41 | 3 | .10 | 1 | 9.22 | 9.37 |
| 18A | 61 | 1.72 | 19 | 10 | .20 | 2 | 415 | 6.80 | 77 | 3 | .10 | 1 | 8.82 | 8.68 |
| 18B | 10 | .28 | 4 | 37 | .78 | 10 | 357 | 5.86 | 73 | 33 | 1.10 | 14 | 8.02 | 8.18 |
| 19A | 37 | 1.03 | 17 | 21 | .43 | 7 | 266 | 4.36 | 74 | 3 | .10 | 2 | 5.92 | 5.78 |
| 19B | 13 | .36 | 14 | 14 | .30 | 11 | 111 | 1.82 | 71 | 3 | .10 | 4 | 2.58 | 2.48 |
| 20A | 15 | .42 | 3 | 120 | 2.50 | 20 | 560 | 9.18 | 75 | 3 | .10 | 1 | 12.20 | 12.17 |
| 20B | 16 | .44 | 4 | 107 | 2.23 | 21 | 489 | 8.02 | 74 | 3 | .10 | 1 | 10.78 | 10.49 |
| 21A | 23 | .64 | 13 | 17 | .35 | 7 | 239 | 3.92 | 78 | 3 | .10 | 2 | 5.01 | 4.96 |
| 21B | 38 | 1.07 | 33 | 8 | .16 | 5 | 120 | 1.96 | 60 | 3 | .10 | 3 | 3.29 | 3.58 |
| 22A | 20 | .57 | 5 | 32 | .66 | 6 | 631 | 10.34 | 89 | 3 | .10 | 1 | 11.67 | 11.32 |
| 22B | 4 | .11 | 1 | 120 | 2.50 | 20 | 597 | 9.78 | 78 | 3 | .10 | 1 | 12.48 | 12.74 |

* INDICATES ANION AND CATION TOTALS DON'T LIE WITHIN 10% OF EACH OTHER.

MAJOR ION CHEMISTRY
TBTGS ASH
NOV 18 1982
TYPE - WATER
ASH CELL AREA GROUNDWATER QUALITY






83-494

POOR

QUALITY

ORIGINAL